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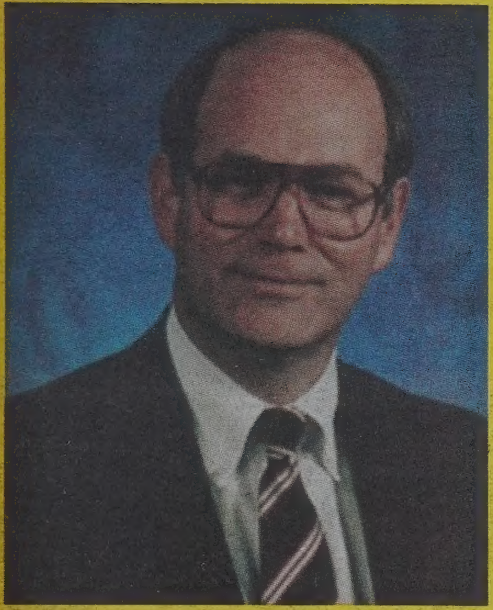
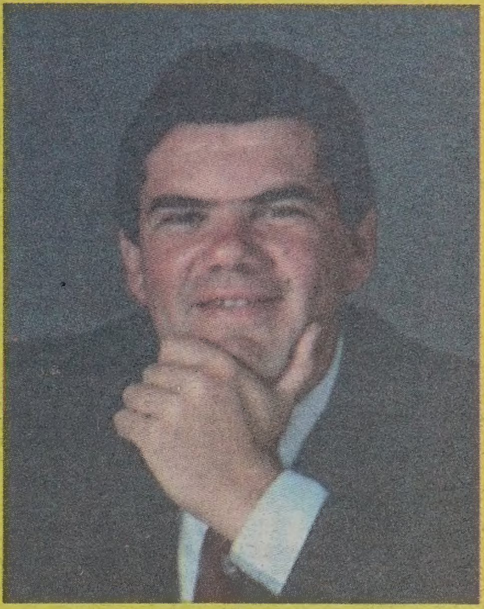


William Lyons, Ashton-Tate

"We want to provide the end-user with the ability to access, manipulate and present data. Get that data down to the desktop or the workgroup. Allow the professional to manipulate that data and turn it into information."

Philippe Kahn, Borland

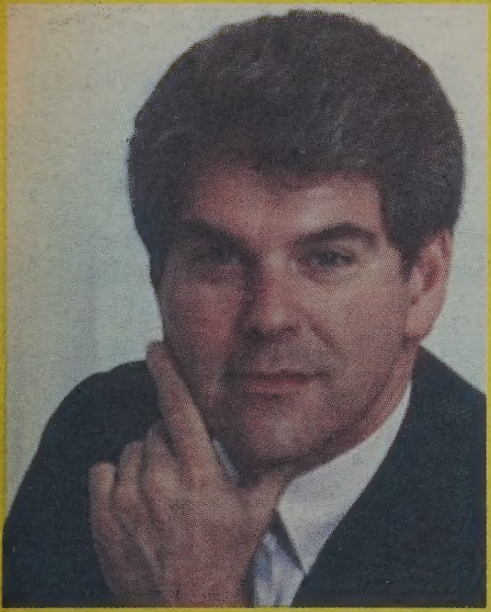
"We're committed to a whole series of products that will help dBASE users get to the next generation of operating environments. It's only a threat to Ashton-Tate if they're not committed to next-generation technology, if they don't support their customers."



CLASH OF THE DATABASE TITANS

Ashton-Tate Takes On Bigger, Stronger Competitors

By Wayne Yacco

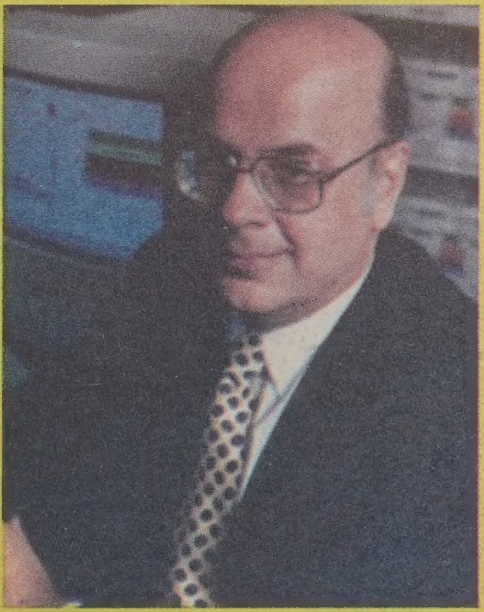


Larry Heimendinger, Nantucket

"Neither Ashton-Tate nor Fox has delivered much power to the serious programmer. Clipper has always addressed that market. It's also proven to be very robust in addressing multiuser applications that run on very large networks."

David Fulton, Fox Software

"dBASE IV 1.1 is mediocre. It's far from innovative. And given the pace at which Ashton-Tate managed to get that one fixed, it doesn't leave me optimistic about their ability to respond to threats."



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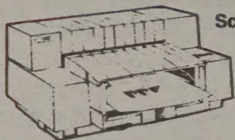

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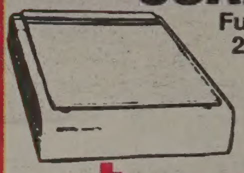

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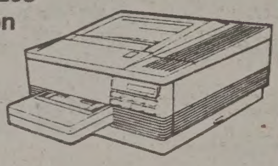

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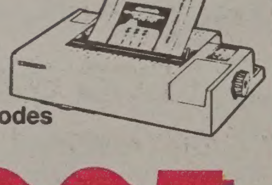

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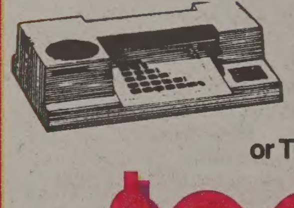

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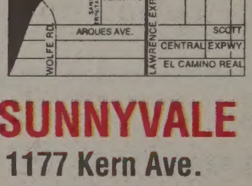
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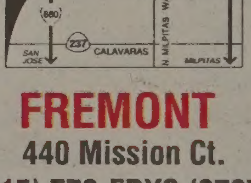
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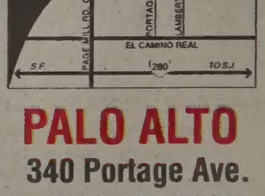
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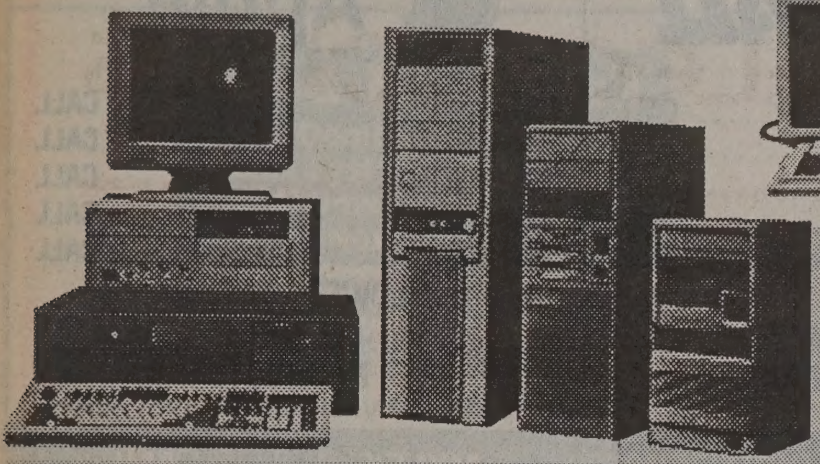

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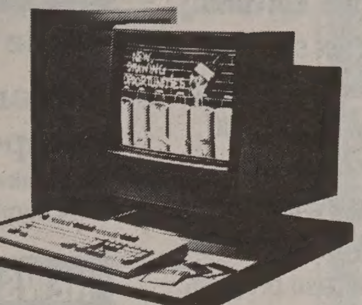

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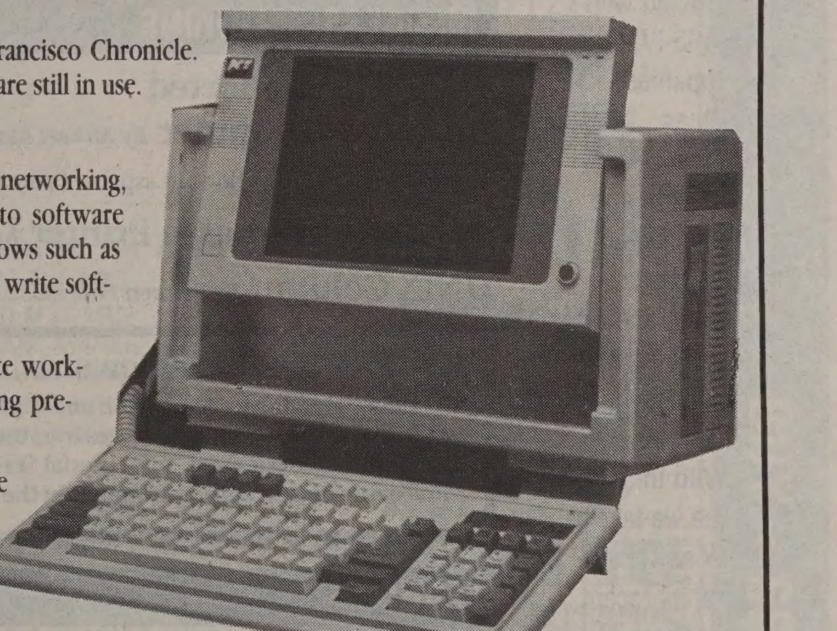

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Ever since we began working with personal computers dBASE has been the standard database program. No matter what anyone would say about dBASE, very few people questioned Ashton-Tate's dominance in the industry.

However, over the last couple of years the industry has been changing. While Ashton-Tate has struggled with dBASE IV, other companies—such as Borland, Fox Software, and Nantucket—have been moving ahead and the competition has heated up.

With this issue we take a look at Ashton-Tate, its recent experiences in court, dBASE's strongest competitors, and some thoughts on what to expect from Ashton-Tate in the future.

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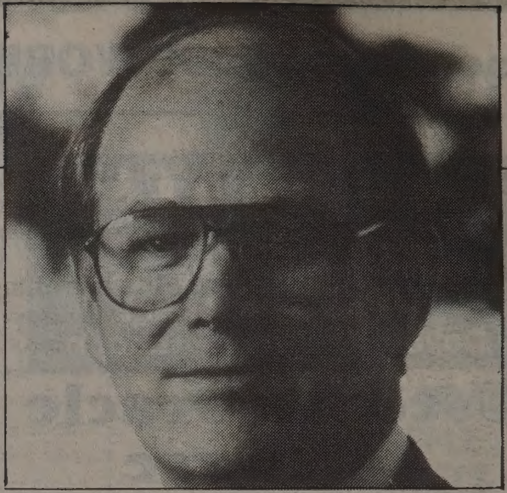

William Lyons, Ashton-Tate.

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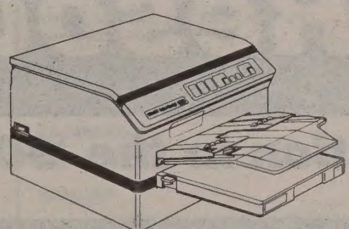

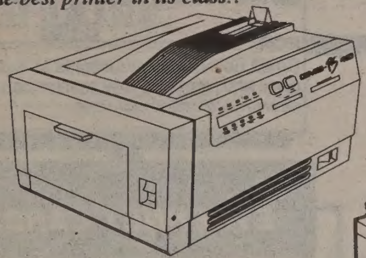

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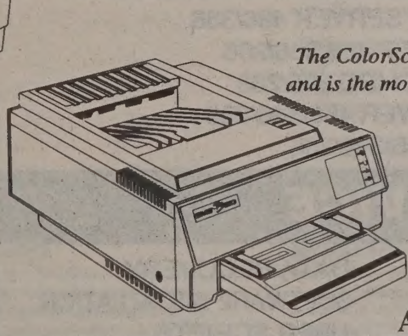

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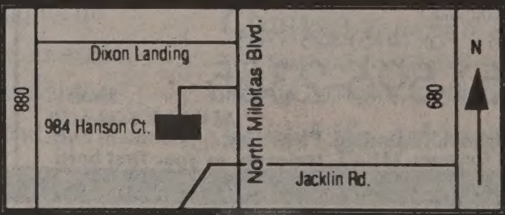

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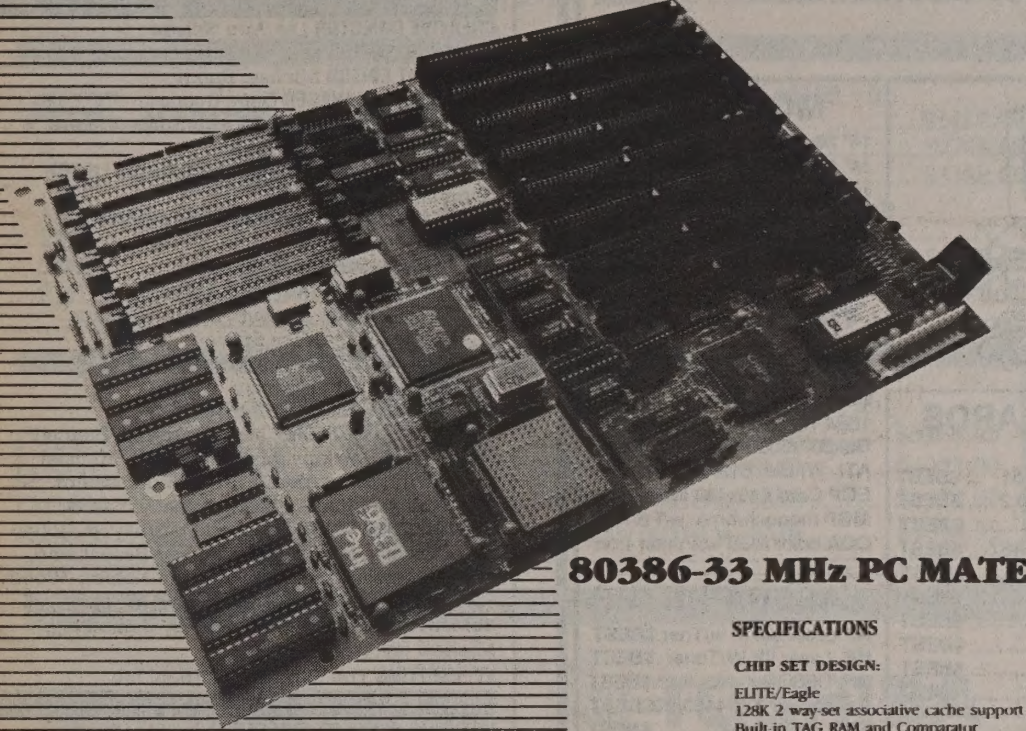

80386-33 MHz PC MATE

SPECIFICATIONS

CHIP SET DESIGN:

ELITE/Eagle
128K 2 way-set associative cache support
Built-in TAG RAM and Comparator
Buffer Write Through Support

CPU:

Intel 33 MHz 80386 microprocessor

SYSTEM SPEED:

Hardware and software selectable CPU speeds (33 MHz/8 MHz)

CO-PROCESSOR:

Weitek 3167 and Intel 80387 math co processor support

BIOS:

AMI/MR BIOS

EXPANSION:

Eight 16-bit/8-bit slots

MEMORY:

Option — 1MB/2MB/4MB/8MB/16MB/32MB
Type — 256K × 9, 1M × 9, or 4M × 9 SIMM modules (80 ns)

PERFORMANCE RATING:

• Landmark version 1.14	54.5 MHz
• Norton SI version 4.50	40.5
• Power Meter version 1.30	7.987 MIPS

SOFTWARE COMPATIBILITY:

OS/2 version 1.2
UNIX/XENIX
MS-DOS/PC-DOS
Novell
Windows version 3.0
Concurrent DOS

FORM FACTOR:

Baby AT mechanical compatibility
All mounting locations available

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COMPATIBILITY AND SUPPORT

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PERFORMANCE

Supports up to 128 KBytes of cache memory, page interleaved memory, and shadow RAM feature. Operating at 33 MHz, 0 wait state cache performance is at 7.987 MIPS using the Power Meter Version 1.30 bench mark software. It also supports the Intel 80387 and Weitek 3167 math co-processor and up to 32 MByte of on-board RAM.

RELIABILITY

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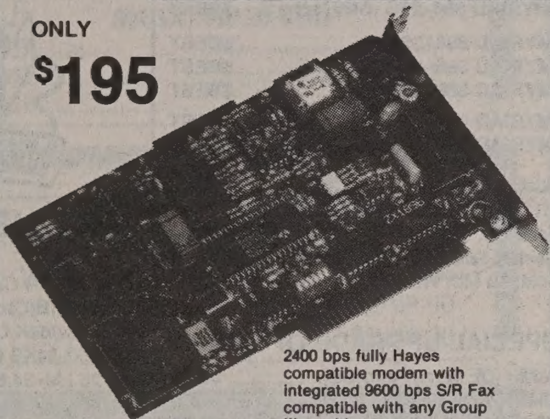

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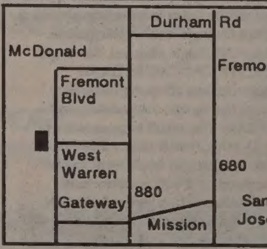

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NEWS & VIEWS

INDUSTRY INSIGHT

BY PAUL HOFFMAN

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

JAPANESE SCREEN DUMPING: MUCH ADO ABOUT NEXT TO NOTHING?

The market for portable computers is becoming more heated as prices drop, speed improves, and more people see the need for conserving desk space. One of the key differences between a desktop PC and a portable PC (there is almost no market for portables that don't run MS-DOS) is the screen. If you haven't seen one, the screen on a portable PC is a flat, gray affair that weighs almost nothing. As you might imagine, most of the screens on the portables (and, in fact, most of the popular portables) are designed and manufactured in Japan.

Last July, the Display Manufacturers Association, a group of American flat-panel display manufacturers, accused the Japanese of "dumping" screens in the US—i.e., the Americans accused the Japanese of selling the screens at below their manufacturing costs. Dumping is illegal in this country, so their accusations were investigated by the US Commerce Department.

At the time, many American computer manufacturers scoffed at the idea, given that the prices they were paying for flat-panel screens were not cheap, and that the screens were being delivered in low enough quantities and by so many manufacturers that dumping didn't make much sense. Some computer company executives noted that they thought the American manufacturers were grousing because the Japanese products were significantly more reliable and had a much lower failure rate in the factory.

In February, the Commerce Department decided that some Japanese manufacturers had indeed dumped screens, although the price was so close to break-even that it didn't really matter. When the Americans had pressed the charges, they said the Japanese were selling at up to 70% below manufacturing costs; the Commerce Department said that the number was much closer to 2.3% below cost. The highest amount of dumping was attributed to Sharp, at 4.6% below cost.

The next step is for the Commerce Department to go to Japan to investigate its calculations and make a final determination in late April. If the Commerce Department finds that the Japanese did dump their products, the Japanese will have to post bonds that equal the average dumping margin. If the 2% determination sticks, that bond will be quite small.

Many American computer manufacturers were quite incensed by the dumping suit. Privately, they said that the suit was an effort by US manufacturers to get higher profits on their screens or to scare some Japanese manufacturers out of the American market.

The American hardware vendors added that the US-made screens were so much more unreliable that they would have been willing to pay even higher prices for the Japanese-made screens in order to reduce their after-sale service costs. It is one thing to want to compete with foreign manufacturers on an even scale, but quite another to want a home-territory advantage when your customers prefer the competition for reasons other than just price.

Some US computer company executives noted that they thought the American manufacturers were grousing because the Japanese products were significantly more reliable and had a much lower failure rate in the factory.

LOTUS CANCELS MARKETPLACE DATABASE AFTER PRIVACY OUTCRY

The MarketPlace:Households database, announced by Lotus last year, has been canceled before its scheduled release. Over thirty thousand people had requested to be excluded from the database before it had even

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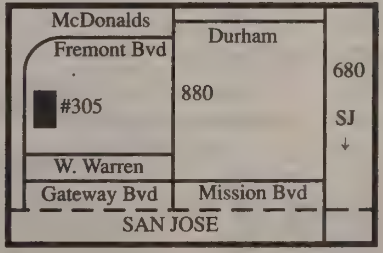

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been published, leaving Lotus wondering how many more people would want to be removed after companies started using the data, and how that reaction would affect Lotus's image. At the same time, Lotus cancelled a similar database of businesses that it had been selling since October 1990.

MarketPlace:Households presented direct mailers with an easy method of finding and screening potential clients' names and addresses. It would have run on a Macintosh and allowed the mailer to choose people by name, address, age range, gender, marriage status, dwelling type (house or apartment), neighborhood income, and neighborhood lifestyle. It is important to note that the same data is already available to anyone from Equifax, Lotus's partner in the project. However, getting lists from Equifax is not interactive, so the mailer has to decide ahead of time on search criteria.

Lotus was caught by the outcry of people who wanted to have their names removed from the database (as well as from Equifax's database). When the product was announced last April, Lotus made a good-faith effort to let people know how they could get their names removed (through the Direct Marketing Association's Mail Preference Service or through Lotus directly). They assumed that some people would want to be removed, but that most wouldn't care or wouldn't make the effort to send mail to the DMA or Lotus. When it saw the number of people who wanted out of the database before it had even been published, Lotus looked at the cost of removing names and the cost of bad publicity and decided to pull out.

When it saw the number of people who wanted out of the database before it had even been published, Lotus looked at the cost of removing names and the cost of bad publicity and decided to pull out.

Of course, Lotus says that it was all a misunderstanding and that the privacy of consumers was assured. For example, it says, the database does not include telephone numbers or individual credit data. However, databases with that information are available elsewhere, and the data culled from Marketplace:Households could be compared with the other databases to get much more personal information.

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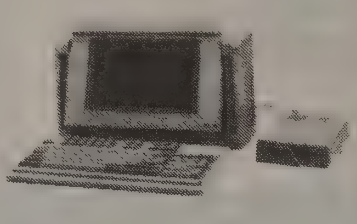

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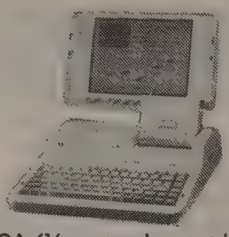

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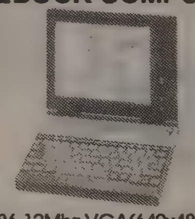

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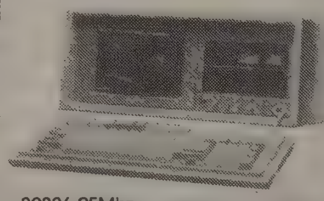

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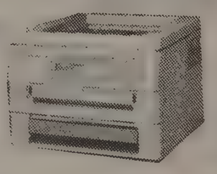

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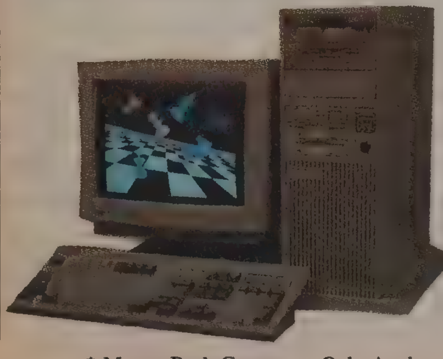

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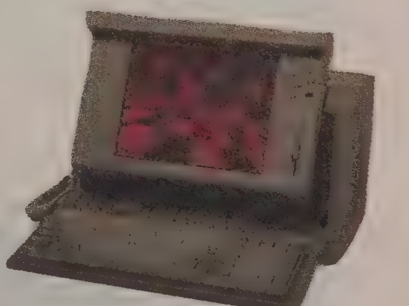

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Lotus might have done better if it had made the safeguards clear earlier on, but there is a good chance that the more it talked about privacy, the more people would want their names out of the database.

GO TAKES ON PEN-BASED COMPUTING

Creating a new operating system isn't that difficult; generating much interest in it can be almost impossible. GO Corporation seems to have grabbed the publicity market by the tail when it announced the PenPoint operating system, which will be used on computers that have no keyboards or mice, only a pen and screen. GO has even gotten commitments from major software manufacturers to strongly consider rewriting their software for PenPoint, as well as commitments from a few hardware manufacturers to actually make the systems that will use PenPoint. Not bad for a new operating system that's incompatible with what's available now and uses a very different paradigm for interacting with the user.

Like GeoWorks before it, GO had to decide whether it was worth writing a new operating system for the special requirement that it saw unfulfilled. GeoWorks is based on the notion that there's a large market of PC owners whose hardware isn't powerful enough to run Windows, but who still want a graphical user interface and easy-to-use programs. It's still much too early to tell if GeoWorks will catch on, whether it would help or not to have major software vendors support the operating system, or even if the market is as large as expected.

> **Until computer manufacturers actually get systems out that run PenPoint or Pen Windows, potential customers will continue to be seduced by the current crop of low-cost portables.**

When GO Corp. was first formed, the idea was that it would manufacture its own hardware. They later decided to concentrate on the operating system and rely on other hardware vendors to create the computers that run it. At least GeoWorks knew that there were tens of millions of computers out there that could already run its operating system

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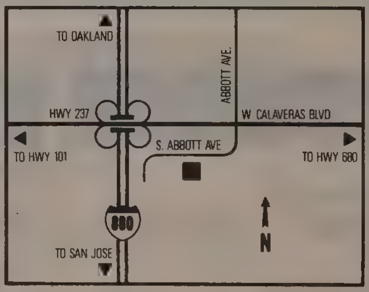

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INTO COMPUTERS

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when it came out.

The market whose existence GO intends to prove consists of people who want tiny computers with no keyboard and no mouse. The computers PenPoint will run on look like small slates with a pen attached. GO has defined three major markets, although there are undoubtedly more.

The first is the executive who needs to compute but is intimidated by standard computers. The advantages of a PenPoint-based system is that it would take up almost no space on his or her desk; also, it's easy to work with at home or on an airplane.

The second market, which is probably much larger, is salespeople on the road. The slate would be used for taking orders, calling up customer records, and communicating with the home office. This market is already being served by keyboard-based portables but GO thinks that these people would prefer pen-based systems.

The third market is comprised of people who need portable computing power but don't need it badly enough to learn MS-DOS and arcane software. A PenPoint-based computer would be so easy that they could be trained on it in an hour or two instead of the

HIGH TECH NEWS FROM JAPAN

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

•NEC and Japan City Media have jointly developed a notebook PC with a built-in teleterminal radio, which will act as a 9600-baud network. The computer will work in most places in Tokyo and soon in Osaka. NEC will later hook the JCM network into its national PC-VAN network.

•Microsoft Japan announced that it will release a Japanese-language implementation of MS-DOS version 5.0 about a month after Microsoft releases the English version in the US.

The Japanese version will be functionally identical to the US version. One of the most sought-after features of version 5 is its lower consumption of RAM. Since Japanese systems need more RAM to translate phonetic characters to pictographic ones, any improvement in memory use is greatly appreciated.

•Microsoft also announced that it will set up its Asian R&D center in Tokyo in about a year. The office will start with two hundred engineers and eventually have over five hundred. It will centralize the Asian operations from offices in Taiwan and Korea.

•NEC will be the first to release a Japanese version of Windows 3.0. Other manufacturers will follow soon, but since NEC has such a huge share of the PC market in Japan, being first will help its image more. NEC expects to help many manufacturers to port their Windows products for the Japanese market.

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Basic Configuration
- 1 MB Memory on Board
- 1.2 or 1.44 Teac FDD
- 101 Keyboard

386-25 System	1,299
386-33 System	1,499
486-25/33 System	CALL

Basic Configuration
- 1 MB expandable to 8 MB
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- 1.2 or 1.44 Teac FDD
- 101 Keyboard

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PANASONIC printer 1180	$160
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LOGITECH serial mouse	$75
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Genius Mouse w/Dr. Halo III	$25
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CASH PRICES

many days it often takes to learn to use character-based MS-DOS applications.

GO has some tall hurdles before PenPoint becomes a success. First, it needs some serious hardware vendors who will produce inexpensive systems that run PenPoint. None of the hardware manufacturers who have publicly announced their intention to make slates are known for low-balling price, although the Japanese and Korean manufacturers have yet to be heard from. GO has to convince enough hardware manufacturers that its vision is correct and the target markets are large enough for the manufacturers to invest in developing new hardware. After that, the hardware manufacturers have to sell the systems against MS-DOS portables that are inexpensive, standard, and already established. Even if it manufactures lots of slates, GO won't make any money unless it sells them in good quantity.

At the announcement, GO showed examples of running sample applications. Everybody agreed that they were slick and easy to figure out, and that the handwriting recognition was very good. The operating system looks a bit like Apple's HyperCard without the baggage of menus. All operations are linked through the operating system so that inserting text is done exactly the same way in every program. To indicate what you are about to do, you use gestures, e.g., an insertion gesture to start writing text or a selection gesture to indicate text or a graphic you want to work on. GO has clearly done its homework on making the gestures easy for the human to remember and simple for the hardware to decipher.

Knowing that GO was going to announce PenPoint, Microsoft jumped on the bandwagon and announced that it was also working on a pen-based operating system, actually an extension to Windows that supports pen input and control. Pen Windows will probably be an extension of Windows 3.1, which may or may not be out this year. Microsoft is lagging behind GO in development, but once the system's finished, software developers will have much less difficulty writing applications for Pen Windows than for PenPoint, since most of the interface will be like regular Windows.

Microsoft claims that this is what users want: a big-name operating system with familiar applications. That remains to be seen, since the kinds of things that GO thinks people will do with PenPoint are not always the kinds of things users are doing right now. To Microsoft's advantage, it is much more likely that manufacturers will make low-cost Pen Windows machines, since they are almost identical to the machines they're already making.

Until computer manufacturers actually get systems out that run PenPoint or Pen Windows, potential customers will continue to be seduced by the current crop of low-cost portables. GeoWorks hasn't really attacked the portable market yet, but you can be sure that many dealers will want to find out if they can sell money-conscious portable buyers on a low-cost, easy-to-use operating system.

It is likely that the first PenPoint hardware will cost in the range of $3,000 for a system comparable to DOS portables costing about $1,500. GO is gambling on customers' willingness to pay the extra money for its easy-to-use operating system in sufficient numbers to make it popular. If GO is right, it will still have to fight with Microsoft, whose product, even if it is harder to use, will work on systems of half the cost. ■

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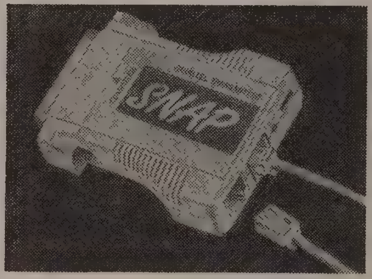

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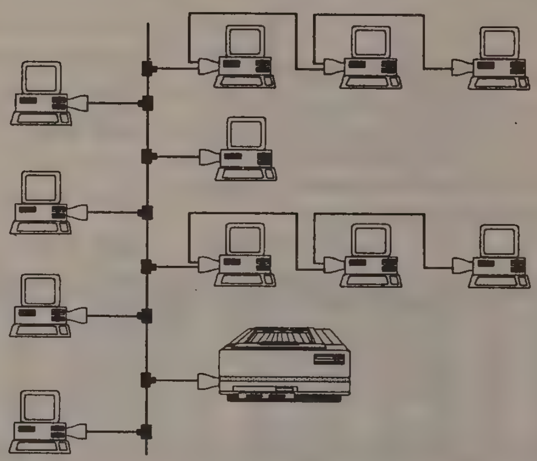

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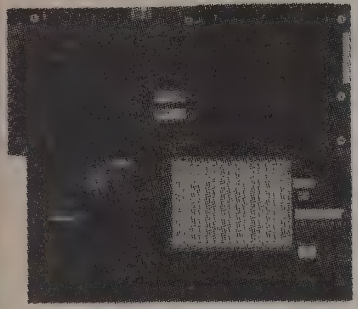

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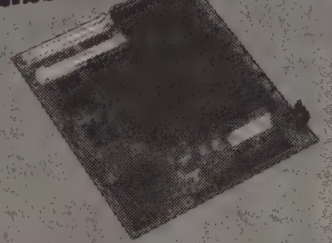

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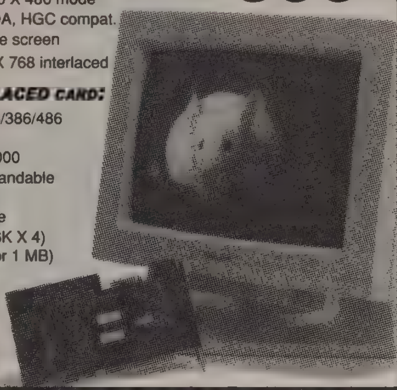

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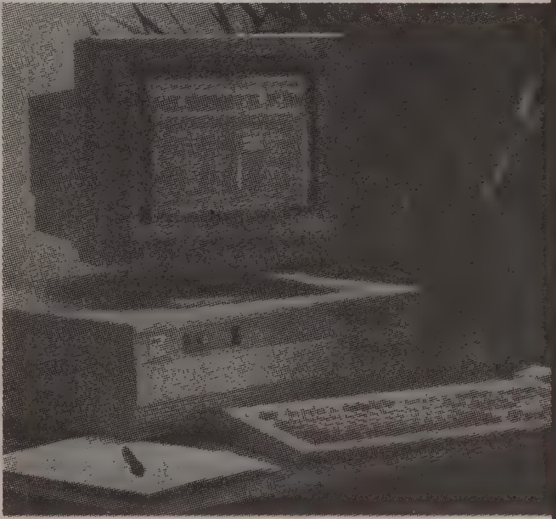

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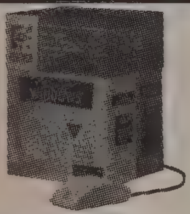

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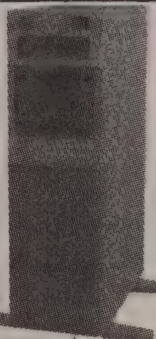

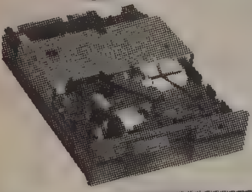

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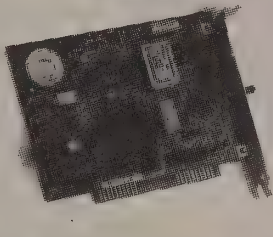

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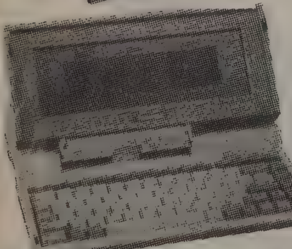

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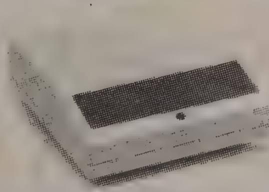

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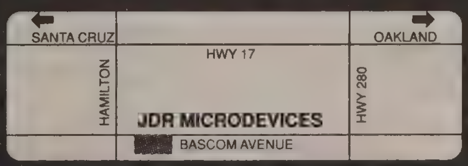

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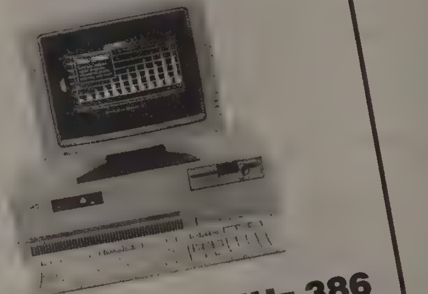

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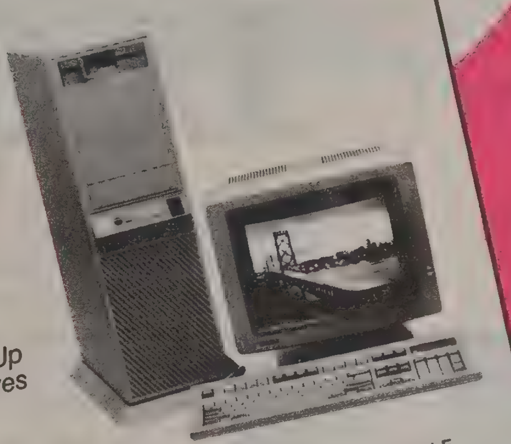

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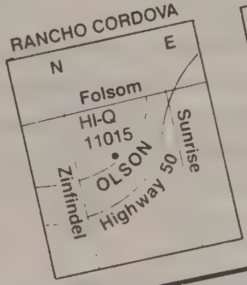

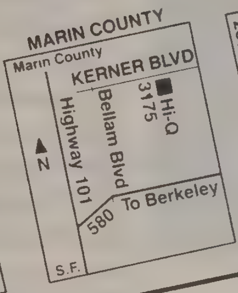

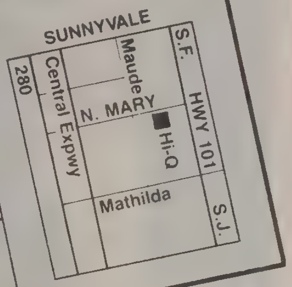

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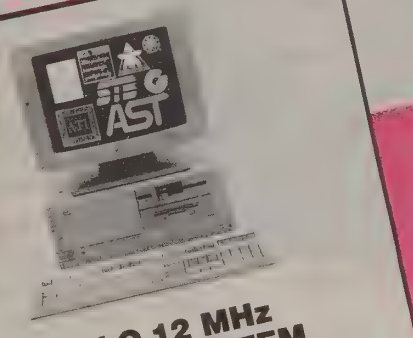

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Landmark = 15.9 SI = 13.4

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Letters

CORRECTION

Well, when we did our *MicroTimes* 100 list for 1990 (January 21), we said it was a turbulent year. However, this is no excuse for the fact that the photos of Sheldon Adelson of the Interface Group and Alan Ashton of WordPerfect managed to get transposed somewhere along the line.

We are thoroughly mortified by this error and apologize to Mr. Adelson and Mr. Ashton for any inconvenience it may have caused.—*eds.*

The Real Sheldon Adelson.

The Real Alan Ashton.

A RESPONSE FROM SRI'S DONN PARKER

John Perry Barlow impugned my professional integrity in his article, "Computer Crime: Beyond The Headlines" in *MicroTimes,* February 4 and 18, 1991. I question his integrity when he said, "If I were in his [Donn Parker's] position, I wouldn't be able to resist maintaining a high level of concern to justify the continued flow of consulting fees." I'm sorry that he has such a low opinion of himself and of me.

All computer security consultants have an economic interest in increasing the correct perception of the computer crime problem. If we overstate the problem, we lose credibility. If we understate the problem, our clients lose incentive to apply adequate security. Therefore, we are highly motivated to state the problem as credibly and correctly as we can even though some journalists attempt to get us to say something sensational or exaggerate what we have said. Do medical doctors overstate sickness to increase their fees? Do journalists such as Mr. Barlow overstate the subjects they write about to increase their fees? Some may do so, but those with integrity do not. (Mr. Barlow incorrectly described and exaggerated SRI's International Information Integrity Institute [I-4] service. Fifty-two companies pay SRI $18,000 per year, not $50,000, to receive a wide range of services from a large staff of senior consultants and researchers, not just from me.)

Do we have a vested interest in overstating the computer crime problem? In the first place, nobody has any valid measurement of the problem to be able to determine whether the problem is overstated or not. I have publicly stated many times my conjecture that business crimes of all types are diminishing in number, increasing in individual size of loss per case, and increasingly involve computers. I have strong arguments to support this.

I may be more altruistic than some in dedicating my career to achieve secure use of computers for the protection of society. I like to think that I am more successful, if not richer, than some people because I put service to society before pecuniary interests.

Donn B. Parker
Senior Management Systems Consultant
SRI International
Menlo Park

Barlow replies:

I offer Donn Parker two sincere apologies. First, I am sorry for having erred on the amount which each of the I-4 companies pays SRI for his services. I was conducting the interview from the top of my head, an area with more proven authority in hunches than details. A professional journalist would have checked on the figure before running the piece. I regret that I didn't.

Secondly, I am distressed that Mr. Parker feels I was attacking his integrity. I meant no such personal insult, nor any insult at all.

That said, I will stand by the point I was trying to make. Whether one represents to his organization an asset capable of bringing in $2,600,000 annually or a mere $936,000, we are still dealing with figures with sufficient size to have a gravity quite capable of bending the reality fields around them.

I did not mean to imply that Donn Parker is anything less than noble and well-motivated in his pursuits. I certainly don't think he's in it for the money. He does, however, represent a significant resource for SRI and is therefore somewhat bound to its institutional perspective. While I agree that overstating the threat of malicious external computer break-ins would lose both Mr. Parker and SRI credibility, casting it as a very minor possibility (which it appears, on the strength of my research, to be) would, I think, tend to diminish the urgency with which those 52 checks get written each year.

One doesn't have to be morally equivocal to adapt to the best interests of his organization, especially if the organization is large and one has been with it a long time. I believe I would do so. I would be surprised if Mr. Parker has not.

APPALLED READER DECLINES TO BUY CURIOSITY DEFENSE

I am appalled at the attitudes expressed by both Ms. Dorothy Denning and Mr. John Barlow in the recent interview "Computer Crime: Beyond The Headlines." Suppose I were to walk into their offices or homes uninvited? Suppose I were to proceed to examine their drawers, their filing cabinets, their closets? I don't want to take anything. I'm just "curious." Or maybe I just want to check out their security systems so I can "advise" them on how to take better precautions.

Suppose I found the front doors to their homes locked, so I proceeded to check every door and window, including those on upper floors? Again, I have no criminal intentions. Just curiosity.

You see, there is a fundamental issue of privacy, and right to access. Just because my front door is not locked, that does not imply that I permit anyone walking by to just come in. Believe it or not, businesses and corporations have those same rights to privacy as do individuals.

Let's first understand that no matter what the intent, entering someplace uninvited is wrong. Period. Then we can determine appropriate recourse or mitigating circumstances.

Any other viewpoint is devoid of fundamental morality.

Chuck Larrieu
Sonoma

Barlow and Denning respond:

We were surprised that Mr. Larrieu interpreted anything we said as approving of people who break into systems. We agree that it is wrong to enter a system without permission.

VIRUS FIGHTER UPDATE

Thank you for mentioning McAfee Associates in "Bulletin Boards And The Virus Plague," in your February 18 issue.

Since Mr. Rickard wrote his article, we have added three more lines to our BBS, bringing the total number of lines to nine.

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NORTHSTAR OWNER SEEKS INFO

I am writing to you in hopes that you may be able to provide me with some useful direction and information regarding Northstar Computers, specifically the Northstar Advantage. I recently bought two Northstar Advantages for home use. They were sold to me through a third party which provided no software, manuals or operating system disks. As this is a CP/M 8 bit system, there is not much available in your recent *MicroTimes* advertisements.

My purpose for buying these "old" computers stems from my memories of my first radio given to me by my grandfather. The radio was one of the first made by Sears, Roebuck & Co. My grandfather was an electrician for Sears for over thirty years. The radio was very old and heavy. It operated with tubes and large transformers. I didn't take good care of the radio and later threw it away.

I now work for the world's most advanced computer company. I see technology coming and going rapidly. I also remember the fact that my grandfather gave me something from the past to learn about and play with. I regret not properly treating the radio, but more importantly I cherish the fact that my grandfather had the radio to give to me.

I bought the computers for roughly the same reason. My son will one day see these things and wonder what they are and marvel at their relative speed and usefulness. I want him to be able to see, first hand, the difference between yesterday's technology and today's advancements.

I have been having trouble finding any information about Northstar Computers and their Advantage line. I don't know if Northstar is still in business. I know they used to be headquartered in San Leandro, California. If anyone has any information or contacts for software, manuals, and operating systems, I would very much appreciate a response. I can be reached at (612)473-8583.

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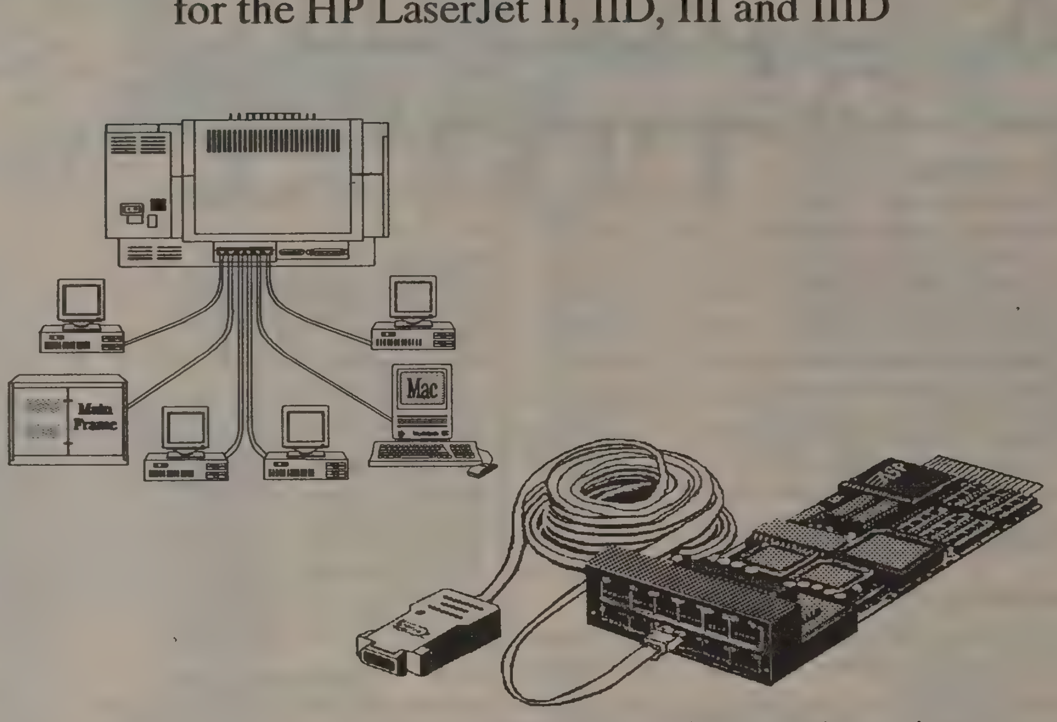

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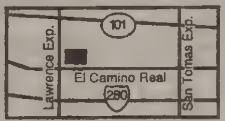

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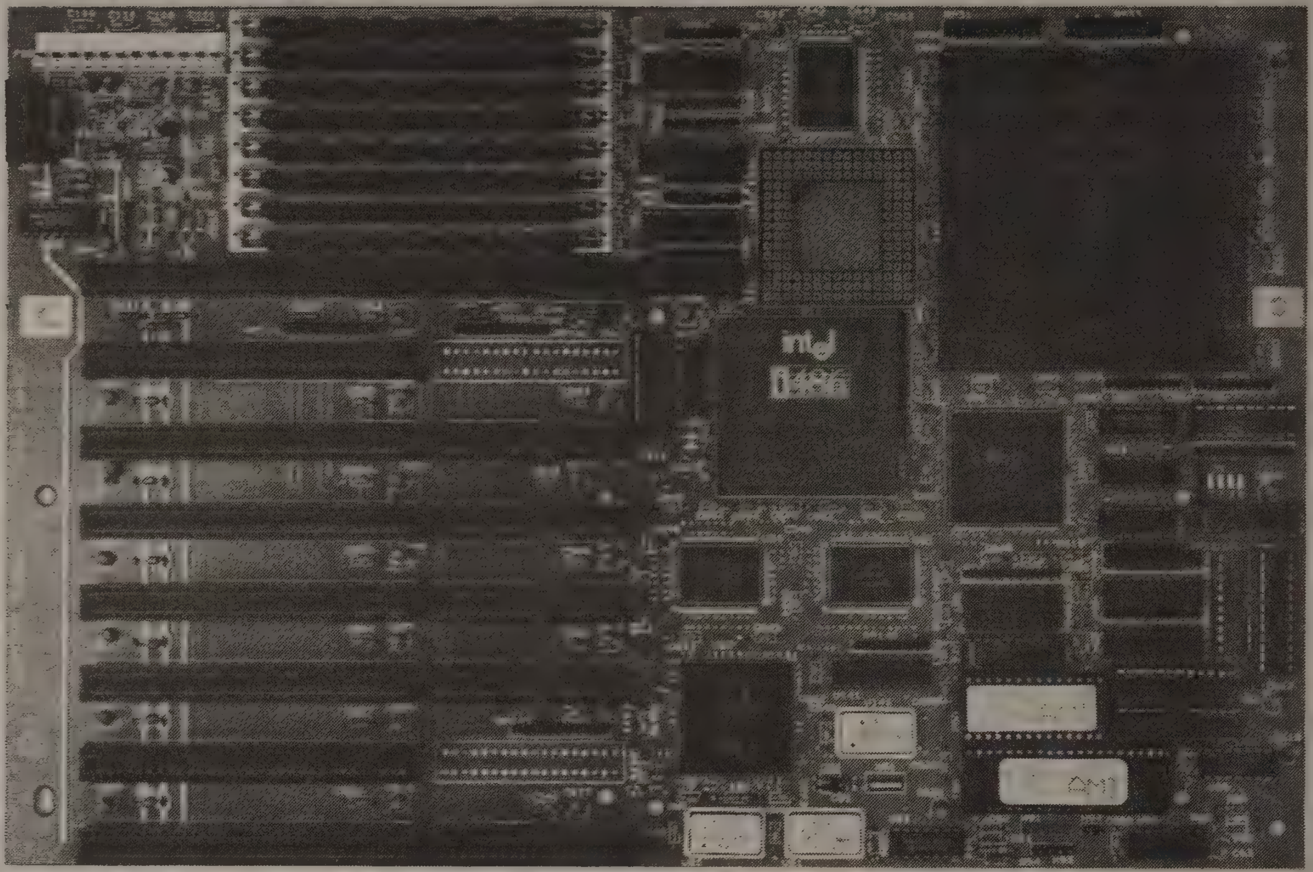

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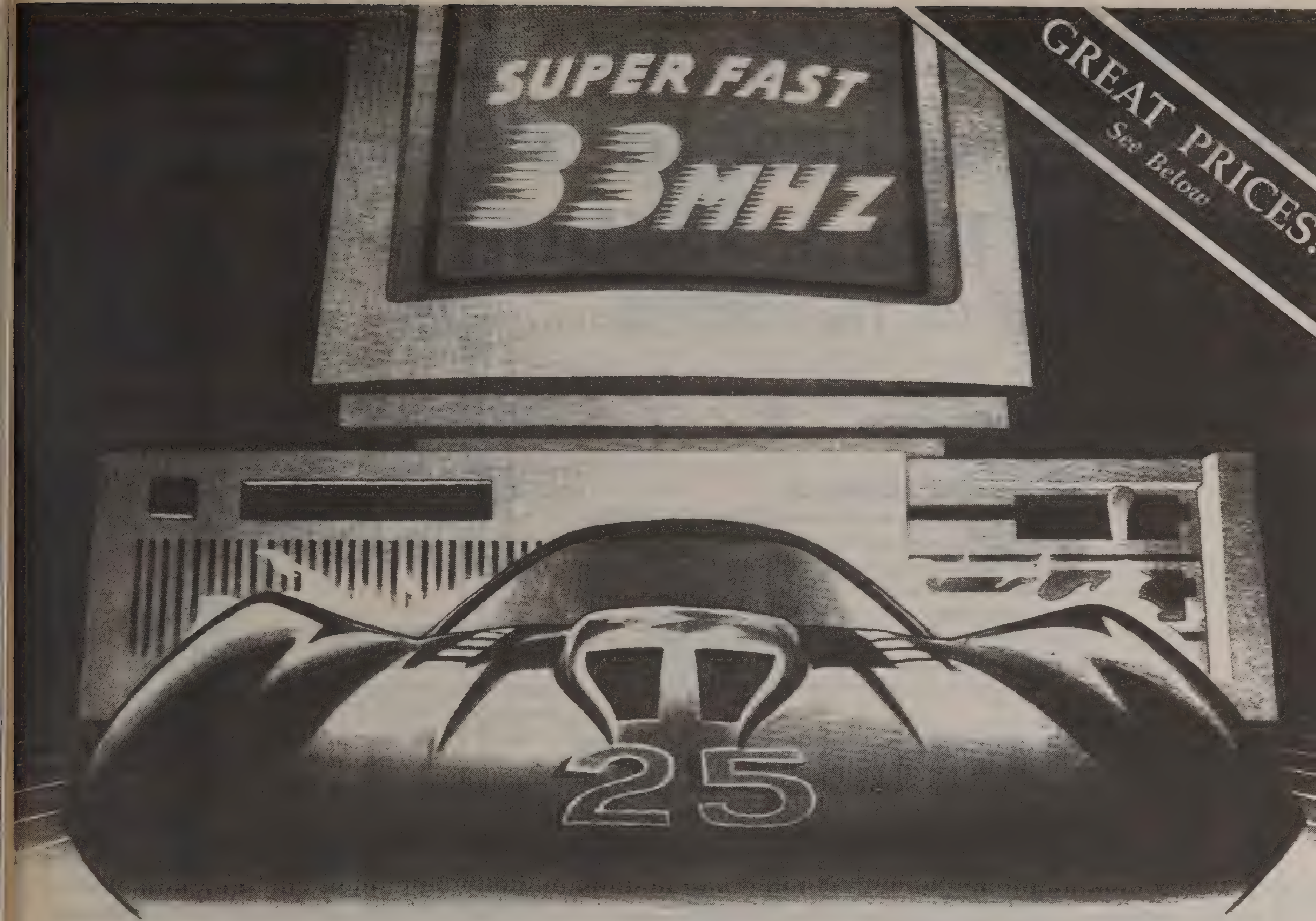

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Censorship, Permission & Responsibility

Liability, The Public Airwaves, Etc.

BY JIM WARREN

This column concerns issues and ideas for tomorrow—and how we, together, can help shape them.

FCC SELECTIVE CENSORSHIP

On January 31st, an electronic notice fanned out across the computer networks. It was initially directed to hams—licensed amateur radio operators. In it, Tom Clark (W3IWI) reported that the Engineer in Charge—the chief bureaucrat—of one of the Federal Communication Commission's twelve US Districts had cited a number of hams, threatening them with fines and loss of licenses. He did so because their fully automated packet-radio message-repeaters had received and automatically re-transmitted one unpermitted message.

REALIZABLE FANTASIES

The three-line message urged support for a particular nonprofit group. The bureaucrat was based in the Navy town of Norfolk; the message favored an anti-war group. FCC rules prohibit conducting business—even for nonprofit groups—on ham bands.

But FCC enforcement is selective. For instance, many US evangelical churches conduct their megabuck business communications with their missionaries, using ham bands. Daily. Explicitly concerning money and business arrangements. They aren't fined. Their licenses aren't revoked.

Copyright © 1991 by Jim Warren. All rights reserved. Jim Warren founded InfoWorld, *the DataCast proposal for broadcast-based paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and one of the nation's largest public microcomputer conventions. He was founding host of PBS television's "Computer Chronicles" series, founding editor of* Dr. Dobb's Journal, *founding President of the Microcomputer Industry Trade Association and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics. Most recently, he has organized and Chaired the First Conference on Computers, Freedom & Privacy, March 25-28, 1991, on the San Francisco Peninsula, co-sponsored by over a dozen diverse nonprofit organizations.*

SHOOTING THE AUTOMATED MESSENGER

Clark said his automated radio repeater forwarded about ten thousand digitized messages per month—a valuable, free, volunteer service. The FCC bureaucrat said FCC rules hold every repeater operator personally responsible for every word in every message their automated systems repeat. Unless, apparently, the messages are from an acceptable church group.

Clark's message was the last one sent from his repeater. Since he wasn't willing to read and censor every one of the ten thousand messages per month his repeater handled, and he valued his license, he was shutting down the system.

It makes sense to hold the originator of a message responsible for its content. But—every owner of every intermediate, automated message-carrier? Can you imagine holding AT&T responsible for every word uttered in every conversation switched through every one of its microwave links?

BBS OPERATORS FARED EVEN WORSE

In comparable instances—but without the clear, though idiotic, FCC regulations—the Secret Service seized several computer bulletin board systems (BBS) almost a year ago. They alleged that some of the messages or email posted by some of the thousands of users of these systems might contain some confidential information. Not national security stuff; but perhaps information about the phone system, or perhaps some unauthorized computer passwords.

Almost a year later, none of the BBS ex-owners have been charged with any crime. However, they have lost their equipment, or had it trashed—and thousands of email users lost their electronic mail.

Can you imagine picking up the contents of entire post offices—or UPS trucks—because some envelopes or packages might contain something illicit?

BUT NOTHING'S SIMPLE

However, information services issues are complex; potential for abuse is significant, and those with oversight responsibilities have few guidelines. Examples:

Types of services: Information services include private email, private file transfers, private teleconferences, and public teleconferences. Information may be transmitted in message, where the entire message remains complete from source to destination—or in packets, where the message is complete only at its origin and destination. What if only one packet of a many-packet message is "improper"?

Content control: What control should service providers be permitted to exercise over content of transmissions? What if content facilitates possible criminal activity—e.g., distributing others' passwords or credit card numbers, illicit copies of software or proprietary source

What responsibilities—or liabilities—should a service provider have for content of information transmitted through or posted on their system? Should a private individual operating a volunteer BBS be treated differently—better or worse—than a large, wealthy corporation?

Continued on page 178

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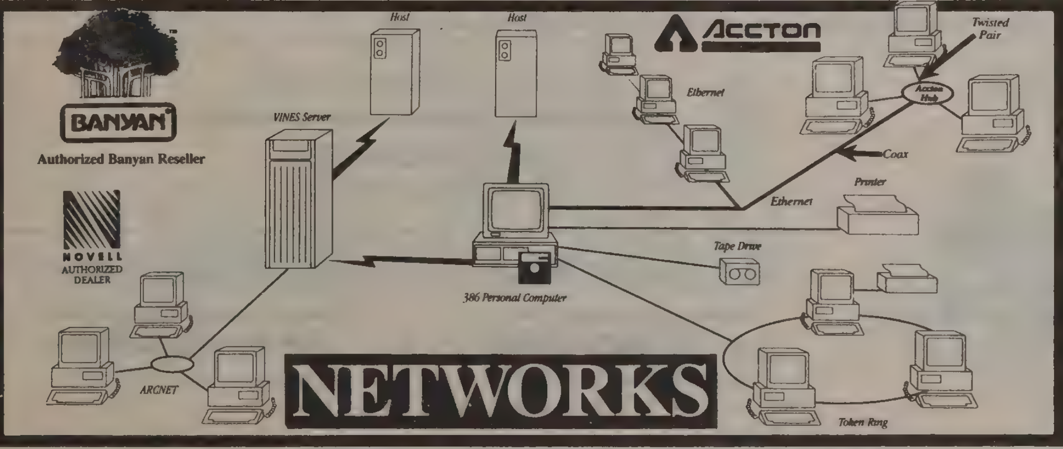

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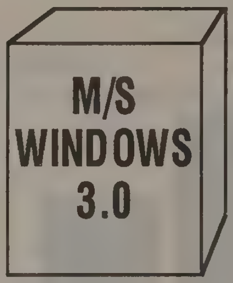

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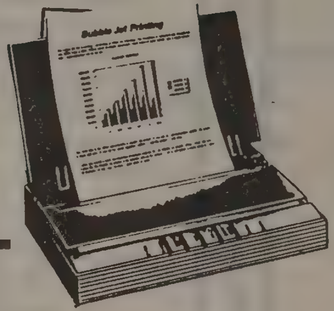

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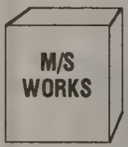

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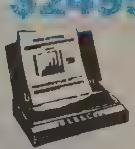

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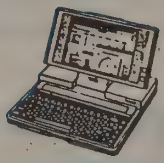

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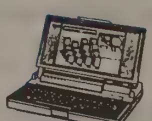

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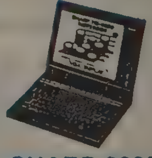

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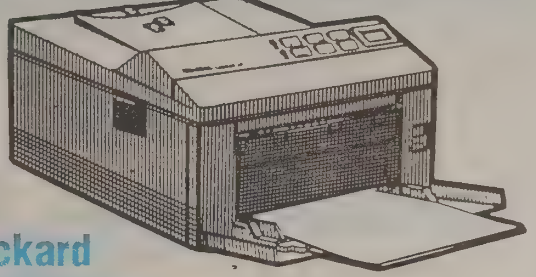

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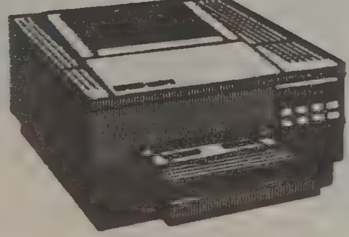

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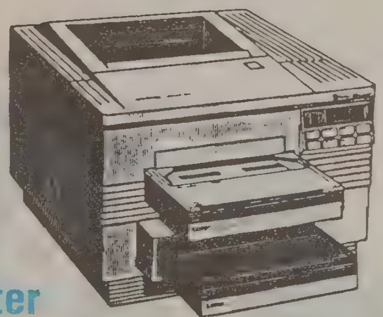

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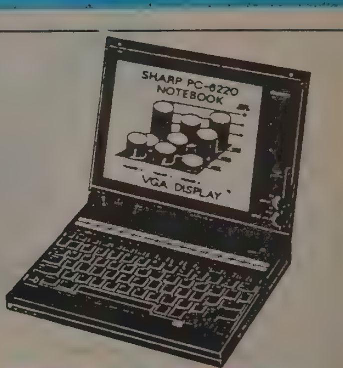

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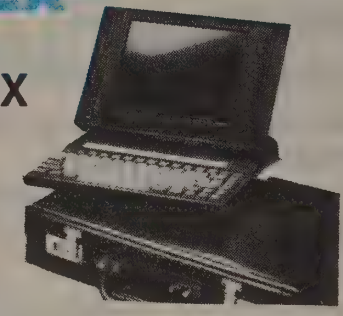

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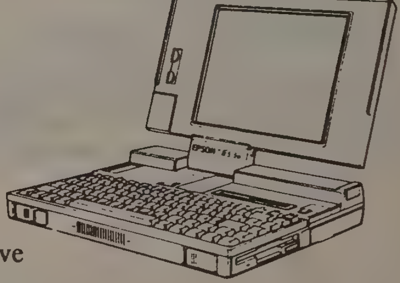

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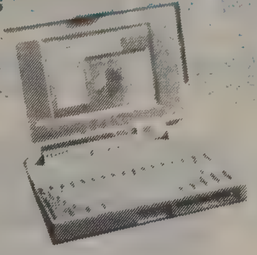

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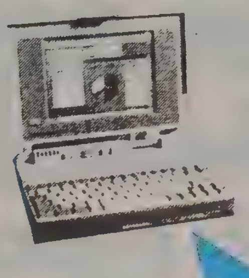

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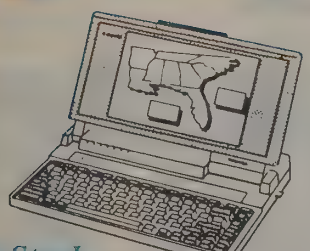

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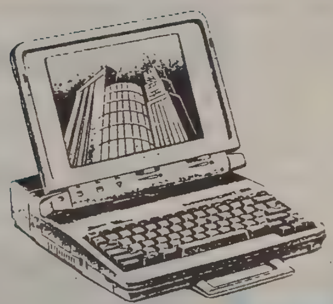

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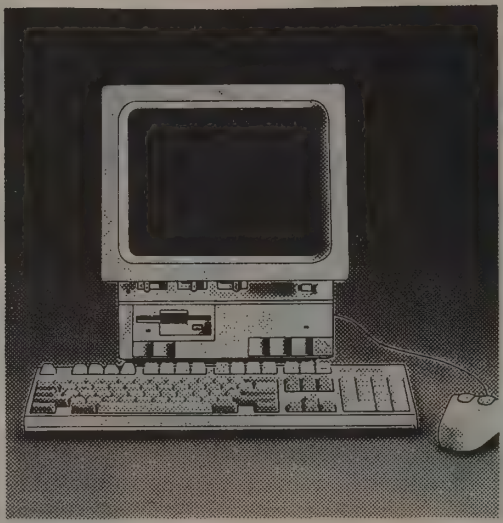

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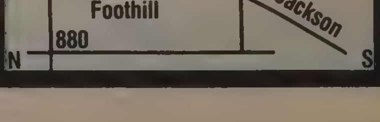

BUSINESS SOLUTIONS

The Well-Supported Business Computer

Support is the second most serious criterion for a purchasing decision, second only to fitness for the desired purpose. Look before you leap.

BY MIKAEL BLAISDELL

All of us whose mothers told us about the high return-on-investment value of an ounce of prevention should give Mom a nod—she was right. There are, of course, many ways in which that proverbial ounce may be applied, but the best may be found in another maxim: look before you leap.

Among properly managed computer software and/or hardware manufacturers, there's an awareness that customer support starts when the initial design team begins to work on the project idea. In the same way, a well-supported business computer system begins to take form long before the check is signed and/or the hardware is installed. If you don't take the time to think about support before you buy, your chances for a good after-sales relationship with your dealer and/or the manufacturers of your system components are very questionable. Happy landings usually aren't accidental; they involve a fair amount of planning and preparation.

For example, consider the following: Your business is in operation seven days a week, from 9 am to 9 pm. The dealer who sold and installed your system provides hotline support from 8-5, Monday through Friday, except holidays. What will you do if/when your system has a problem on a weekend or evening? What will be the effect of waiting until the next business morning for assistance? If you've waited until after the system has been installed to ask that question, your options have been severely limited—you may not have any at all.

Buying or upgrading a computer system or software is a serious decision for a business, for the effects can be very dramatic. Just as you may benefit substantially from the increased efficiency that the new system or upgrade can offer, you can equally be hurt. Computers can be addictive, and the withdrawal effects may be dangerous to the health of your business. To be safe, you have to know how far you can trust the computer resource, and know your options for when, not if, the problem comes.

But what if the system checks out perfectly in every other respect, except service availability and/or quality? Go somewhere else.

Don't buy poorly supported or non-supported products—not ever. In the long term, support is the second most serious criterion for a purchasing decision, second only to fitness for the desired purpose. The other factors, price, performance, upgradeability, etc., are all points to be considered only after you are completely satisfied about the fitness and support.

The fastest, most powerful computer system won't do you much good if it's unavailable most of the time due to lengthy repair and maintenance requirements. This lesson should be familiar to most of us from our experience with our automobiles. High performance cars have a lot in common with high performance computers; you need to have a good relationship with your mechanic

If you're going to be using custom programs created or modified significantly for your business, choosing the vendor calls for extreme prudence. As one veteran businessman put it: "It's not like I'm marrying my software supplier—but we're definitely engaged in a very long-term relationship." Accounting systems are especially crucial in this regard.

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Mikael Blaisdell is a consultant to software and hardware companies regarding VAR-marketing, customer support, documentation and training issues. He is also available to in-house Help Desks, and may be reached at (415)865-1323. Electronic mail addresses are: CompuServe id: 70365,1246, or tao@WELL.

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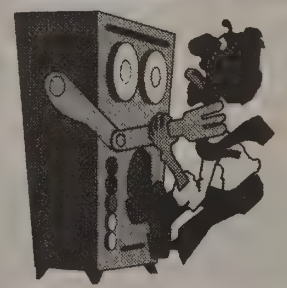

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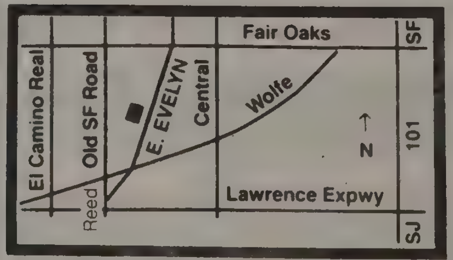

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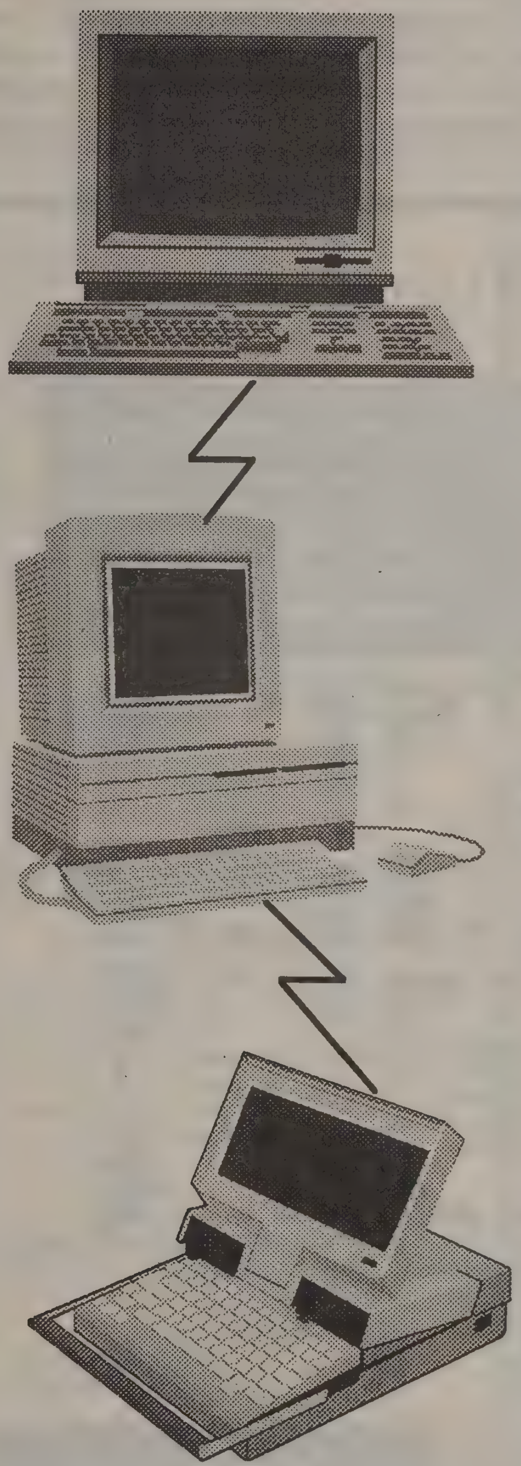

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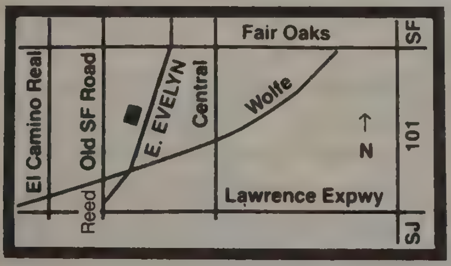

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if you're going to buy one. We've learned, often by bitter experience, to carefully check out the reviews concerning the cars that we buy and the repair services that we patronize in order to avoid getting stung. The same sort of care must be applied to purchasing hardware and software, for your business relies on your computer far more than you do on your car—and getting temporary replacements is nowhere near as easy.

What if the system checks out perfectly in every other respect, except service availability and/or quality? Go somewhere else.

CHECKING THE SUPPORT

Proper evaluation of support options takes some time and research. These days, all computer hardware or software manufacturers seem to provide the same types of support services, or say that they do, but this picture is very misleading. The quality of support services can and does vary tremendously from manufacturer to manufacturer. All support is not equal, and it will profit you considerably to find this out before you buy.

For example, there are different lengths of warranty periods for products. Some manufacturers offer 90 days, others one year—but some still provide only a limited 30 day warranty period. After the expiration of the initial period, you may be able to purchase an extension. If so, be sure to remember to factor that cost into your pricing analysis. Shop around. Talk to other business users about their experiences with warranty services to determine what is reasonable and customary—and real.

HARDWARE SERVICE

For hardware components, the most obvious support option is the availability of on-site service. The factors to check are the guaranteed response time and the extent of the coverage. If your system includes some specialized board options, make sure that the repair service also supports those boards and has the spares to back up their claims.

Find out what happens if major components fail—will the service rep install a new high capacity hard disk if yours goes down? How about restoring your backup?

A lot of hardware service technicians are not equally competent on software issues; this is not in itself a black mark, but be sure that you have software coverage as well to handle such eventualities.

By all means, get references and *check them thoroughly.*

Modern computer systems are often made up from components from a number of manufacturers, which means that your main system board, disk drive, tape drive, video board, RAM, multiport board, keyboard and monitor may all come from different sources. You don't want to find out the hard way that

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For critical systems, the above concerns should be checked even more carefully. The guarantee of response time should include the option of rental systems, completely configured to your exact specifications. Properly considered, a response time guarantee is not expressed in how long it will take from receipt of your call to the arrival of the technician, but in the maximum amount of time your system will be down and your data unavailable.

If you don't take the time to think about support before you buy, your chances for a good after-sales relationship with your dealer and/ or the manufacturers of your system components are very questionable.

There may be quite a price range for the above services, and it's important to take a serious look at those prices. If you can't see how the dealer or VAR can make money from providing this level of support, you should ask yourself some hard questions about the validity of the guarantees. If the dealer goes out of business, the guarantees may become suddenly worthless, and you will be the loser.

But what if your operation doesn't really need that level of support? The point is that you must carefully assess what your true needs will be before you buy, and make very sure that the dealer can be trusted to meet those needs. After the sale, it's too late.

SOFTWARE SUPPORT

The same care given to checking out the hardware service levels and availability should also be applied to the software components—and then some. If you're going to be using custom programs created or modified significantly for your business, choosing the vendor calls for extreme prudence. As one veteran businessman put it: "It's not like I'm marrying my software supplier—but we're definitely engaged in a very long-term relationship." Accounting systems are especially crucial in this regard.

Types of software support services include the standard hotline and bulletin-board systems, where you call in if/when you have a problem and a technician attempts to resolve it as best they can. There's an incredibly wide range in quality among such services, running from sincere concern and dedication at one end to unbelievable arrogance, neglect and indifference at the other. As you can imagine, knowing what kind of reception you

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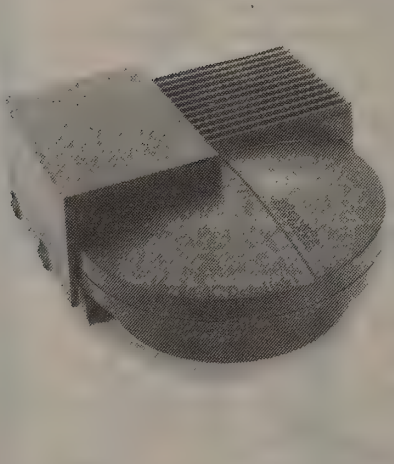

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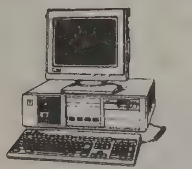

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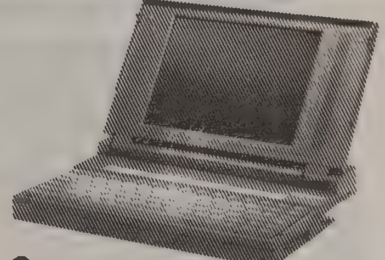

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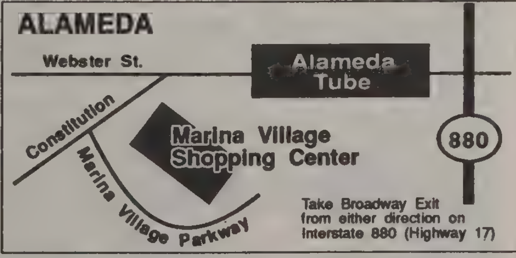

Take Broadway Exit from either direction on Interstate 880 (Highway 17) can expect is a very important piece of information to have before you buy the product.

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* All Everex products, including hard disk drives (purchased from Everex) and monitors automatically carry a 1 year on site maintenance contract (3 month on Tempo systems) when installed in an Everex computer system. (Includes future EVEREX add-on products.)
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* Micro Strategies is an authorized Step Certification Center for certifying Step computers that ARE out of warranty. Upon certification, on site or carry in service contracts can be issued based upon customer preference.

Apart from the free vs. paid hotline support issue, the software assistance groups take one of two basic approaches: active call-in or call-back. A service that uses the call-back method takes your name and number, promising that someone will call you back to get the details of your problem, and ideally solve it. The best groups who use this method will guarantee a call-back within a set period of time, ranging from thirty minutes to two hours. If there's a fee involved, and they miss their guarantee, a quality company will not charge you for the call to make up for their broken promise. At the other end of the spectrum, it may take several days for the call to be returned. If this would be a problem for you, don't buy that vendor's product.

The active call-handling groups take your calls as they come, assigning technicians on a first-come, first served basis. This can result in sometimes lengthy waits, but if the hotline uses an 800 number, at least it's on their nickel. If you're paying for the call, the already shaky claim of "free support" just got weakened even further. So, when considering your purchase, find out how the support group handles calls, and what their average statistics are. One vendor offers disk jockeys who play music for those waiting on hold—which suggests that waiting times can be quite long indeed. If you don't like the picture of yourself standing by the phone listening to recorded music for a while, it might be best to choose a different product. A good support team takes pride in having the shortest on-hold periods, and will have their statistics available for you. Cross check this information against the published reviews in the computer magazines.

Bulletin boards are an excellent source of software support services, especially if the forum is located on an independent service such as CompuServe, the WELL, GEnie or a similar facility. In-house bulletin boards are not nearly as good, for the access is much more limited, usually costs more in long-distance charges, and tends to discourage user-to-user contacts. Censorship is likewise an issue when the board is located in-house. The value of the national on-line services is that lots and lots of people use them, so you are much more likely to get an answer to your postings.

The value and usefulness of such BBS resources cannot be overstated: if you don't have a modem for your system, get one ASAP. BBS systems are the closest thing to free support you're likely to find, and the quality is often better than calling the hotline.

"FREE" VS. "PAID" SOFTWARE SUPPORT

Software support is *never* free, despite what the manufacturers or others may claim. Manufacturers who advertise "free" support are simply bundling the estimated costs of that support into the original selling price. If they estimate right, they might make money. If not, they lose money—and the quality of the support doesn't take long to go down the tubes. As the competition among manufacturers gets stronger, you may expect to see more companies adopting paid support plans. It would be nice if the original purchase price would be lowered as the support costs were unbundled, but this is very un-

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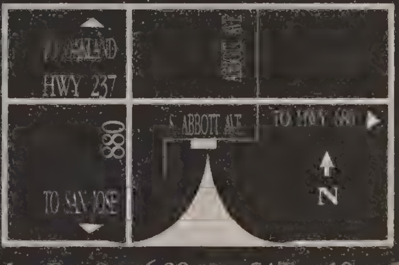

M - F : 9 - 6:30 . SAT : 10 - 5

likely.

"Paid" support plans are actually in your best interests, since you have more control over the quality of the support you're paying for. Check to see if the plan you are being offered includes regular product upgrades and revisions. This is an excellent benefit, and may indicate a company that is getting serious about regarding its customers as long term relationships. Plans that merely offer you a certain number of calls, of "incidents" without specifying response times, etc., may be of questionable value. Get references, and check them.

Also look into alternate sources of telephone support for the product. Some third-party companies have begun to offer 900-number support for some products in competition with the original manufacturer. It's too early to tell if this will be successful over the long term, and there have not been any published reviews of such services in the larger circulation magazines or papers so far. Note that if you call a 900 number for support, the clock starts ticking the instant the phone is answered—whether or not they are able to help you. The support company can't reverse or drop the charge from their end. The only way you can avoid paying for such a call is to contact your local phone company once the charge appears on your bill. The phone company will reverse such a 900 charge only once, so be sure you know what you are doing before you start dialing.

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The best form of software support, of course, is from someone who knows both the software and how you're using it in your operation. Here too, it is wise to check references and explore alternative sources. The more options you have, and the more you know about those options, the better your chances for getting effective support when you need it.

EXTENDED SOFTWARE SUPPORT SERVICES

Some software manufacturers, primarily database management systems makers, have begun to offer consulting services as an extension of their regular support offerings. If you can find one that knows your business as well as their product, this may be a perfect match, and well worth the cost. At the least, it offers an alternative or backup source of support apart from that offered by your dealer. One such manufacturer will even send a representative to your location if desired. Of course, this isn't likely to be cheap, but knowing that it's there if needed is very reassuring.

PUTTING IT ALL TOGETHER

The essence of what you're looking for is evidence that both the manufacturer and the dealer regard the sale as being just the first step in a long relationship. For such a relationship to work over time, both parties must benefit from it, and be interested in seeing it continue. If the only benefit that the manufacturer gets out of the deal is the initial purchase price, their interest in you will inevitably fade as time goes on. However, if they are still making money by selling you upgrades and/or providing support services, they are much more likely to be interested in the quality of those upgrades and services.

If you've done your homework before signing the check, you will know what your options are and what risks you are assuming with your purchase. If you haven't, you may expect that the cost will be much higher and the quality probably lower when the day comes that you need support or service for your computer.

When Mom told you "a stitch in time saves nine," she may not have known much about the specifics of business computers, but she knew what she was talking about. ■

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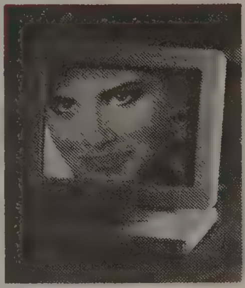

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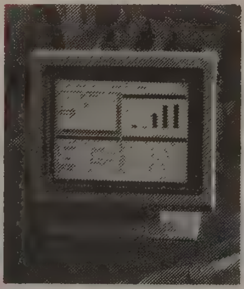

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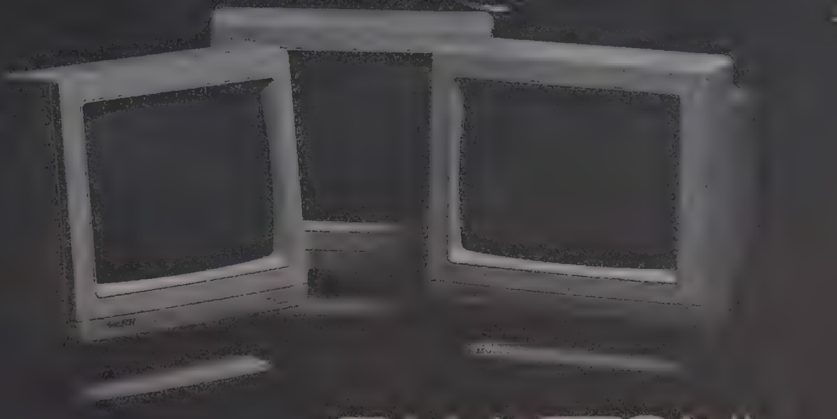

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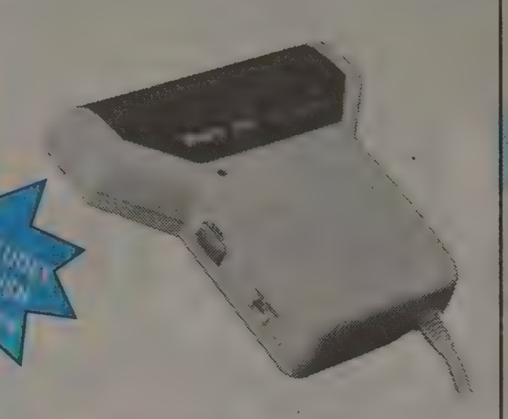

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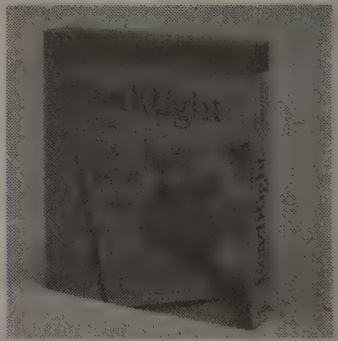

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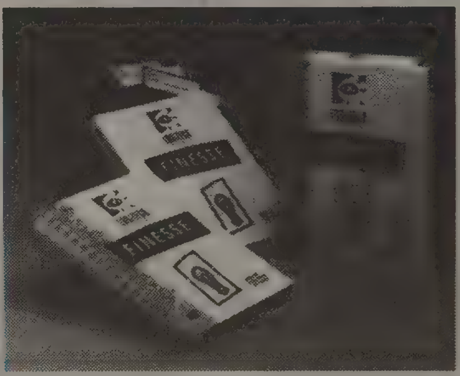

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At Last— A Portable Printer!

Canon's New Machine Does The Job

BY ED KAHN

While portable computers have finally evolved to the point that they actually deserve their moniker, printers have lagged far behind. Business people can easily travel about with computers that rival their desktop machines in power and speed, if not color display, but they have been severely hampered by the limitations of portable printers.

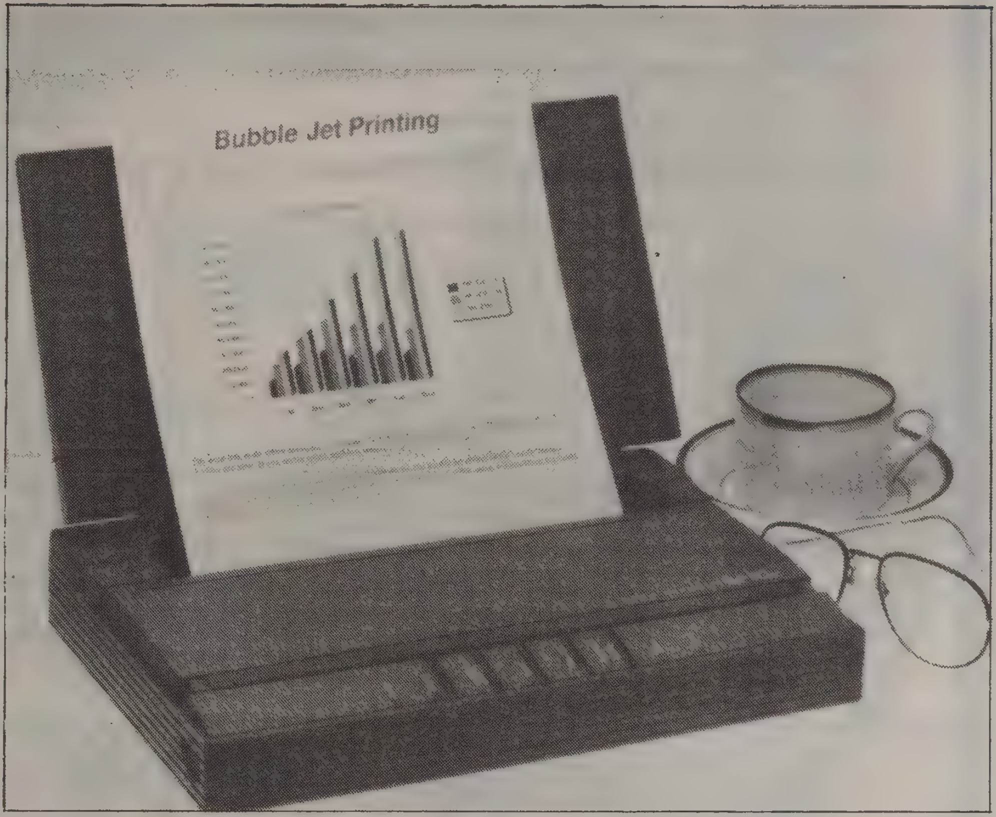
Some of the early portable printers had such poor print quality that they could hardly be used for anything more than the most informal communications. Others would take only one sheet at a time. Still others used thermal print that often required special paper, which curled, like most modern fax outputs.

Until the introduction of the Canon BJ-10e, there was no printer you could conveniently take on the road that would provide an output rivaling laser quality, accommodate a cut sheet feeder, and operate on battery power.

The Canon printer is a welcome relief and will probably dominate the portable printer market for some time. It offers quiet high-quality output. While no speed demon, it gets the job done in an acceptable time. In either economy or high quality mode, it prints at 83 characters per second at 10 characters per inch. It also offers 12 and 17 cpi, as well as proportional spacing. Additionally, the printer design provides a good deal of versatility. In its simplest configuration, it weighs about 4 lbs. and is similar in size to a notebook computer, measuring roughly 12" x 8.5" x 2."

In addition to the basic printer, there are several accessories available. The most important is a cut sheet feeder ($90), which attaches to the back of the printer and allows for the loading of up to thirty pages of plain paper. (The printer does not accommodate form feed paper.) Although thirty pages is a small reserve, it's usually enough for the kinds of work you're likely to do on a portable printer.

The Canon BJ-10e utilizes a bubble jet technology and requires an ink cartridge, which lists for $25 and will print 700,000 characters in high quality mode, which translates into several hundred pages. Economy mode uses about half as much ink and still offers an acceptable quality at the same print speed.



The Canon BJ-10e defines the next generation of portable printers

Until the introduction of the Canon BJ-10e, there was no printer you could conveniently take on the road that would provide an output rivaling laser quality, accommodate a cut sheet feeder, and operate on battery power.

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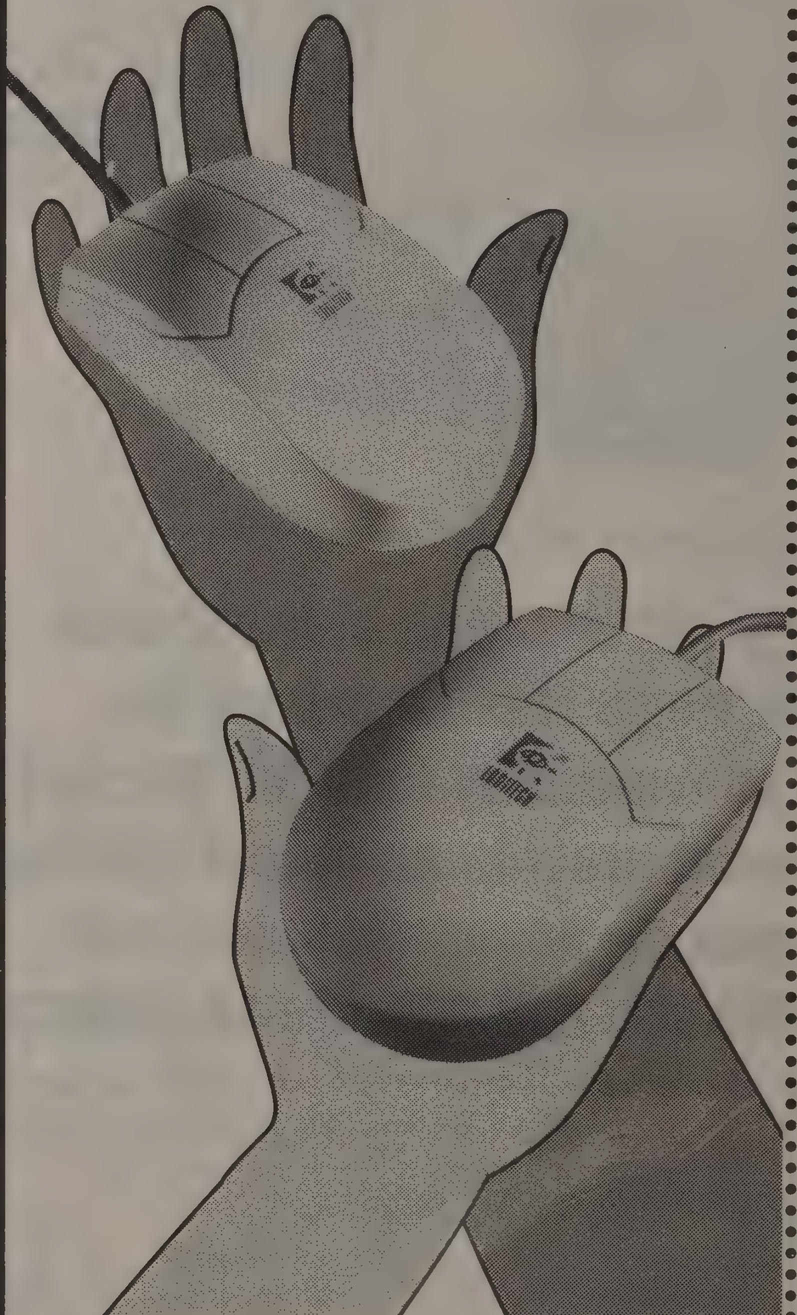

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The only difference is that the characters are not as dark. The cartridges cannot be refilled. One can hope that eventually refillable cartridges will become available as this would substantially reduce the cost of printing.

FEATURES AND OPTIONS

This is a well-designed printer. The basic unit, the most portable configuration, allows you to feed paper in one sheet at a time. Although the printer comes with a power supply, an optional NiCd battery pack ($50) will provide forty minutes of operation; it requires a ten hour recharge. I don't really see all that much use for the battery pack, as few people need to print in locations without electrical outlets, but it's a good option for those who require complete standalone portability.

A swivel stand on the two-inch back of the computer can be turned out 90 degrees to provide a stand for setting the printer on its edge. This exposes a slot on the bottom of the computer that can be used to feed either sheets of paper or number 10 business envelopes.

In its most portable configuration, this printer can do everything you're likely to need, but you might find it too slow and cumbersome for documents more elaborate than simple memos and letters. With that in mind, Canon has provided the cut sheet feeder. Leaving the printer standing on its two-inch edge, you attach the feeder to the bottom, which is now the back of the printer. Installing the feeder is literally a snap. Even with the feeder installed, the whole unit is now four inches thick, so carrying it around is still practical. Even with the tray installed, you can still insert individual sheets of paper and envelopes—just fold down a small tray and move one of the ten easily accessible DIP switches into the off position to tell the printer not to expect paper from the feeder.

Canon has really provided all that is needed in this printer. Although the printer uses a Canon BJ-130e driver, it's also compatible with an IBM Proprinter, so almost any software can use this printer right out of the box. A final touch is that there is a 37K print buffer, which means that you can download decent size files into the printer without tying up your computer.

A NEW STANDARD?

Is there anything lacking in this piece of equipment? From my point of view, it will be a standard for a long while, the printer against which future entries will be meas-

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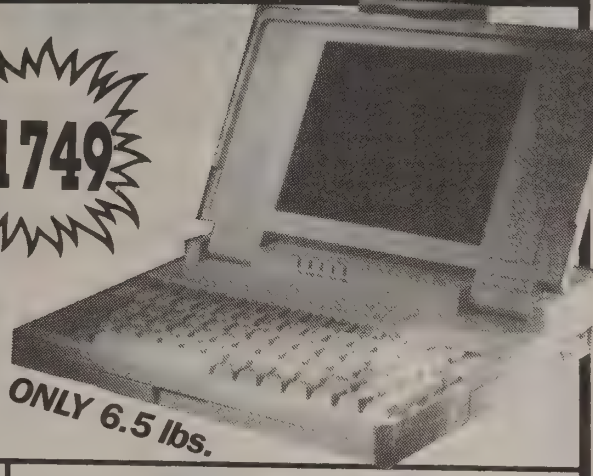

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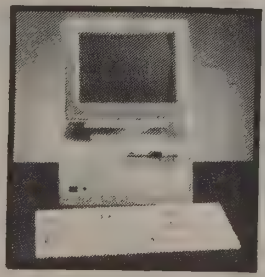

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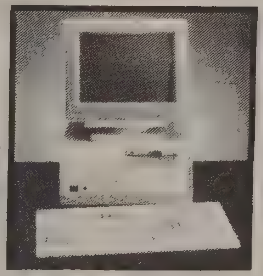

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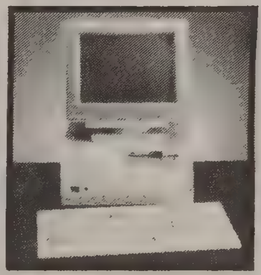

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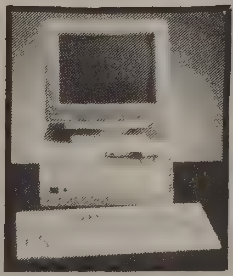

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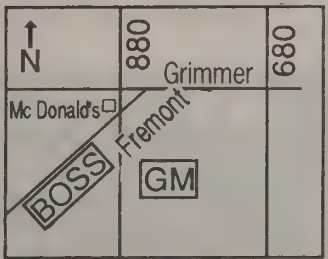

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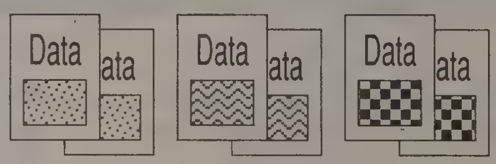

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ured.

I wish that some sort of carrying case were available, as it is cumbersome to carry the printer, power supply and cut sheet feeder loose. Although I had no problem, one friend reported that he found it insufficiently durable for the beating it may be required to take on the road. In normal use, however, I have had no problems with the unit or its accessories. The instruction booklet is well-written and thorough.

Canon is marketing this printer as either a home-office or portable printer. While the print quality is good enough to justify the claim that this can be an all purpose printer, it is really too slow and lacks sufficient paper storage capacity for anything but the most limited home office applications. ■

Computer Of The Month

The Commax NB-386SX

Powerful notebook computers, once scarce, are now available from a number of vendors at prices substantially less than those charged for the first machines. Commax Technologies has just released a powerful notebook model for $2795, which includes a VGA black-on-paper-white display, 20MB hard disk, 1.44MB floppy drive and carrying case. The whole package comes in a seven pound package including rechargeable NiCd batteries.

The NB-386SX is a sleek tan unit that features power as well as portability. The 386 processor runs at 16MHz and comes with 1MB of RAM, expandable to 5MB ($645 extra).

The Commax measures 8.5" x 12" x 2"; the top opens up to reveal the 8.5" screen. While the display is crystal clear, users may still prefer to connect to a conventional color monitor—easily accomplished through the 15-pin connector on the back of the unit. Switching between the built-in display and the monitor is done through software included with the machine. I prefer the setup that allows you to switch back and forth through a manual control, as this makes it easier to hit the road with the computer, leaving the monitor behind. But it's really simply a matter of getting used to one system or the other.

The keyboard on the Commax has eighty-two full travel keys. For the most part, I like the layout of the keyboard, although I don't care for the placement of the control key in the lower left corner and the Caps Lock key to the left of the "a". It is more convenient for me if these keys are reversed. Fortunately, however, it's possible to attach a keyboard of choice to the PS/2 keyboard port on the back of the unit.

Just above the keyboard there are a number of LED indicators that tell the status of Num Lock, disk drives, power and such. A low level battery indicator alerts you when it's time to recharge; battery life is about three hours. A reset button is an added convenience that's often overlooked on notebook units.

This computer is well designed and carefully manufactured (although the unit I received did have a faulty on-off switch). The documentation that comes with the computer is not typeset, but rather looks more like photocopies of a typed manual. While the information contained is fairly complete, it seems that the documentation has been translated from Japanese.

Unfortunately, MS-DOS is not included with the computer. It seems strange that such a well-priced unit that even includes a carrying case would make you pay an extra $67 for an operating system. But considering the price of the basic unit, this is still a bargain.

Power-hungry customers can upgrade the hard disk to as large as 60MB ($490 extra) and add a math coprocessor ($425).

The NB-386SX has a one-year warranty; end-users may return the unit within thirty days without a restocking fee.

RESOURCES:

BJ-10e Printer $499
Canon U.S.A., Inc.
Printer Division
One Canon Plaza
Lake Success, NY
11042
(516)488-6700

NB-386SX Notebook Computer
Commax Technologies, Inc.
2031 Concourse Dr.
San Jose, CA 95131
(408)435-5000

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SI (4.00)	41.3	32.0
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80386-25 MHz SYSTEM

$1329

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- 80387/Weitek 3167 Socket
- Page/Interleave Memory
- IBM AT-Bus Compatible
- 1 32-Bit, 5 16-Bit, 2 8-Bit
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LM (0.99)	34.5
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80386SX SYSTEM

20 MHz $1169

16 MHz $1109

- 386SX 6-Layer Mainboard
- Socket for 80387SX
- C & T NEAT SX Chipset
- IBM AT Bus Compatible
- 5 16-Bit & 3 8-Bit
- AMI BIOS

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MIPS (1.2)	2.45	3.46

80486-25 MHz SYSTEM w/128K CACHE

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- 486 Mainboard
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- On-Chip 8K Cache, 128K 2nd Level Cache On Board
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MIPS (1.3)	11.232

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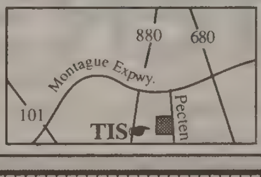

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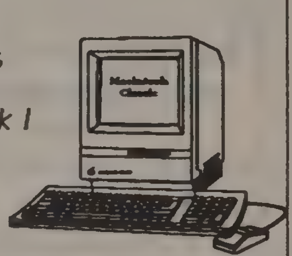

The Macintosh Classic is the ideal entry-level machine. It offers all of the most valued advantages associated with Macintosh, including ease of use, and the ability to run thousands of existing applications, all at an affordable price. The Macintosh ClassicS built-in capabilities allow it to be configured with an internal hard disk and you can expand its memory to 2MB.

The all-in-one design of the Macintosh Classic 2/40 comes with 2 MB of RAM (expandable to 4MB), internal 40-megabyte hard disk drive, internal 1.4-metgabyte Apple SuperDrive floppy disk drive, ADB keyboard and mouse, system software and training disk.

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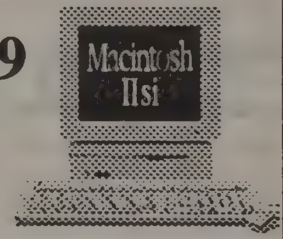

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2mb RAM, 40MB HD

The new Macintosh IIsi is an excellent choice for business or educational use. With built-in cache for increased performance, the IIsi delivers serious number crunching. Rich color and built-in sound capabilities are a given with the IIsi. And because it has built-in video support, it will drive four different Apple monitors.

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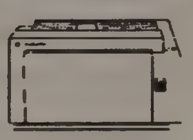

The Personal LaserWriter® LS printer is the most affordable Apple LaserWriter ever! Yet it creates crisp, professional documents, at a rate of up to four pages per minute. It also incorporates TrueType™, Apple's new font technology that lets you scale and print characters smoothly and precisely, from the smallest footnote to the largest headline.

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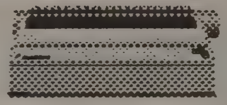

The affordable dot-matrix printer works with any Macintosh computer and offers the flexibility of printing in color-with an optional color ribbon and appropriate software. Printer cable not included.

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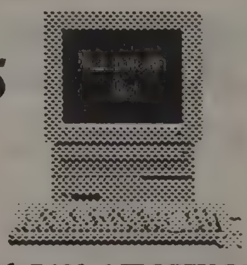
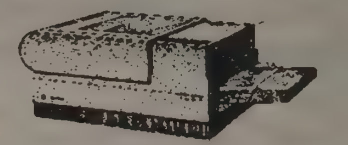


4 mb RAM, 1 FLOPPY DR

At 25 mhz, the processor in the Macintosh IIci speeds up performance and saves you time. The high-performance Macintosh IIci can run most applications 45 percent faster then the Macintosh IIcx (up to 75% faster with the optional RAM cache card). Built-in video support eliminates the need for a separate video card and frees an expansion slot for other uses.
Keyboard and monitor optional.

Apple® LaserWriter® II



For PostScript® text and grapfhics, or networking requirements, get a LaserWriter IINT or IINTX. Both units produce 300 DPI output, print up to 8 pages per minute, and come standard with 2 megabytes of RAM. For the fastest performance, the LaserWriter II NTX has a built-in 68020 processor that prints up to four times faster then previous LaserWriter printers.

LaserWriter NT..........$3149
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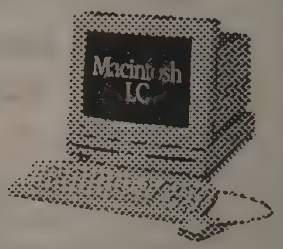
Macintosh® LC



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The Macintosh LC is the most affordable color Macintosh system. With a sleek, modular design, sound capabilities, and solid performance, the Macintosh LC is perfect for both the education and business environment. The Macintosh LC offers a range of features that make it an excellent entry-level system.

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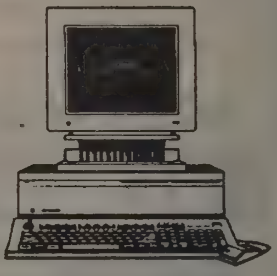

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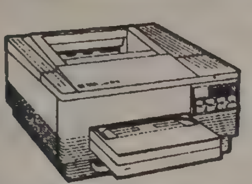

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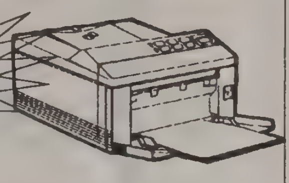

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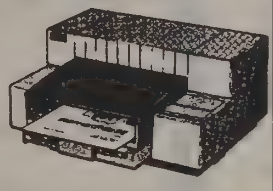

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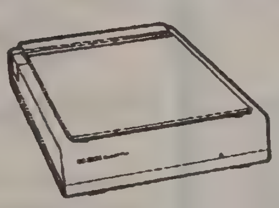

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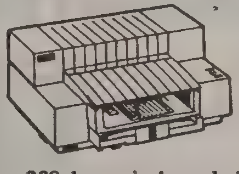

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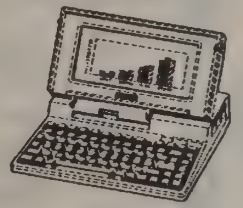

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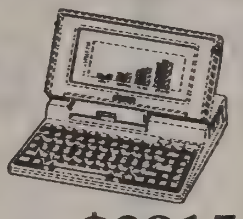

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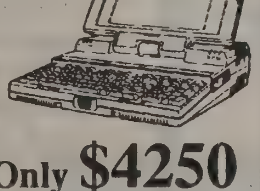

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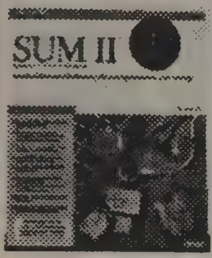

SUM II is a collection of specialized utility programs designed to keep your hard disk operating at peak performance. You'll be able to recover data if you accidently delete a file from a disk or crash your hard drive.

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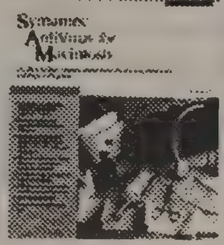
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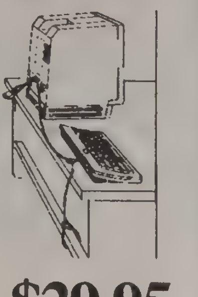

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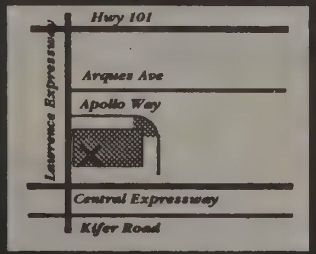
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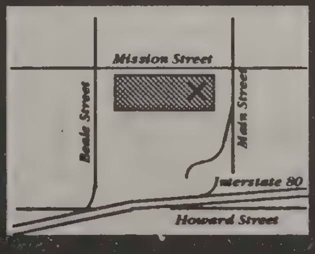
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Stopping UNIX

For UNIX Users, the notion of stopping the system by merely turning it off is one of those creepy, fingernails-on-chalkboard sorts of ideas

BY BENNETT FALK

UNIX

Entropy being what it is, it seems silly to have to explain to anyone how to stop a computer.

Few things in life are as intuitively satisfying as flipping a power switch, and anyone who has used a personal computer has also relished the idea of just turning the thing off and walking away.

UNIX computers have power switches like anything else, and the effect of turning off a UNIX computer is more or less the same as that of turning off a PC. For UNIX users, however, the notion of stopping the system by merely turning it off is one of those creepy, fingernails-on-chalkboard sorts of ideas.

At the very least, there are matters of etiquette to be considered: it is simply rude to take a multiuser system down without notifying everyone who happens to be using it at the time.

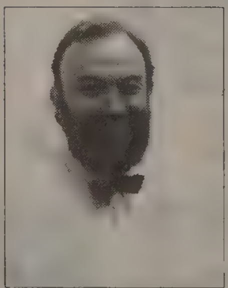
More to the point, remember that in general the UNIX kernel controls access to memory, CPU, and disk resources behind the backs of the users. The kernel doesn't control access to the on/off switch. What the operating system is doing in the background, particularly with disks and filesystems, is sufficiently complex that just pulling the plug on a UNIX computer may make it impossible to restart without losing data.

That is all well and good, but if the power switch is off limits, just exactly how does one stop a UNIX computer?

VARIATIONS ON THE THEME OF "STOP"

The answer to that question depends on what "stop" means.

The normal state of a UNIX computer is "multiuser mode": in multiuser mode, all the filesystems set up for the system are mounted, and there are processes looking for login attempts on all the terminals for which the system is configured. When a user logs in on one of these terminals, UNIX checks for a valid login name and password combination and starts a shell process that gives the newly logged-in user access to the system. When the user logs out, UNIX again monitors the terminal for new login attempts.



Copyright © 1991 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

On most UNIX systems, multiuser mode is one of several "run states." The most common alternative to multiuser mode is, naturally, "single-user mode," which is used by the system administrator for doing system maintenance. In single-user mode, only the root filesystem is mounted and only one privileged terminal (the system console) accepts commands. No other terminals are monitored.

For most users, taking a UNIX system from multiuser mode to single-user mode is effectively stopping the system. Whenever UNIX is running there is a single process (running a program called "init") which controls the system it's running in and manages transitions from one state to another.

In fact, once the init process is running, it governs all process spawning until the system is powered down. It is one of the first processes launched when UNIX is booted and typically has process id 1. Stopping (or for that matter, starting) a UNIX system is largely a matter of telling init to change to a different run state. Requesting a new run state from init is a privilege reserved for the "root" login. Regular users are not permitted to change the system's run state.

SYSTEM V VS. BERKELEY UNIX

Unfortunately, AT&T's System V and Berkeley UNIX use different mechanisms for communicating with init.

In Berkeley UNIX a change of run state can be triggered by sending the init process a signal with the "kill" command. ("Kill" is not well named: it is a general purpose program for sending all sorts of signals or interrupts to a running process. Some, but by no means all, of those signals can cause the process to die.) In Berkeley UNIX, sending init a signal to terminate starts the transition from multiuser to single-user mode. In the Berkeley implementation, init itself has no way to shut the system down completely. The job of bringing a Berkeley UNIX system down is handled by special utilities ("halt" or "reboot") that stop (and optionally restart) the operating system.

System V offers a much richer way of communicating with init. The System V version of init supports up to eight different run states. The various states (known as 0, 1, 2, 3, 4, 5, 6, and S) are defined in a file named "inittab" in the /etc directory. The system administrator can tailor these definitions to local tastes, but by convention, run state 2 is regular multiuser mode, state 1 represents single-user mode.

States S and 0 are particularly noteworthy. State S is a single-user state that does not rely on the inittab file. State 0 is used to prepare the

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system for being powered down, and for those systems that support software control of the power switch, init can actually be used to stop the system.

Under System V, the superuser communicates with init by issuing a "telinit" command with the name of the desired state as an argument. ("Telinit" is simply an alternate name linked to the "init" executable.) Once init receives the name of the new run state, it scans /etc/inittab for information about that state, and makes the necessary adjustments to enter the new state.

It is worth noting that under System V, init itself depends on a lower level function named "uadmin" to stop or reboot the system, and that init is only one of several ways to invoke uadmin.

With SCO UNIX, for example, the system can be stopped with the commands "shutdown", "reboot", or "haltsys". "Reboot" and "haltsys" are two names for the same shell script. When invoked as "haltsys", uadmin is called to prepare for turning off the power; invoked as "reboot", the script takes the operating system down and restarts it automatically. "Shutdown" is also shell script. It warns users periodically about the impending shutdown and then uses init to change the run state.

Stopping (or for that matter, starting) a UNIX system is largely a matter of telling init to change to a different run state. Requesting a new run state from init is a privilege reserved for the "root" login. Regular users are not permitted to change the system's run state.

PLAN AHEAD

Of course, having to thread one's way through the various commands, permissions, and version differences cuts two ways. It reinforces the notion that rebooting is not something to be taken lightly, but it also makes the on/off switch all the more attractive particularly in emergencies. It is always a good idea to know how to stop the system well in advance of actually having to stop it, and the best source for that information is the system administrator's guide that came with the system you actually work with.

Apart from that, if the lure of pulling the plug is more than you can resist, at least issue the "sync" command first. "Sync" is a simple command any UNIX user can use to force the system to synchronize its data cache and disks. It won't absolutely prevent the loss of data when you flip the switch, but it will at least give you a head start in an entropy-filled world. ■

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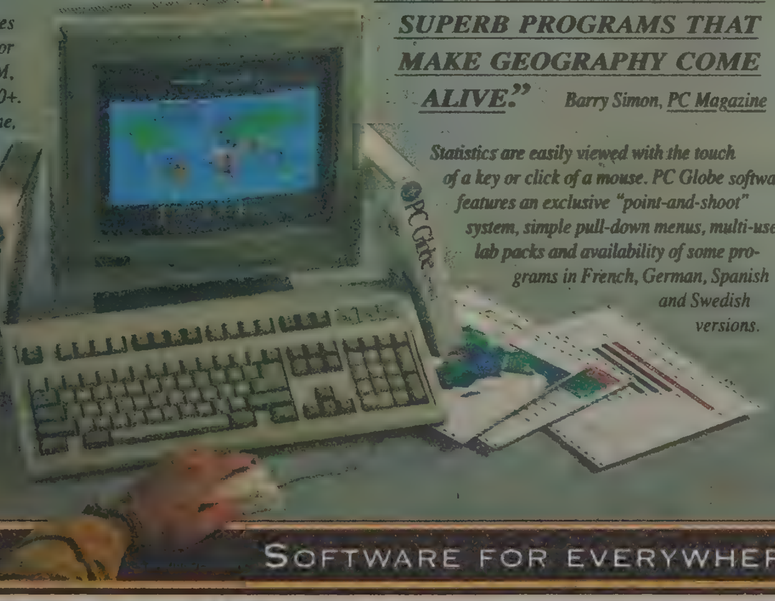

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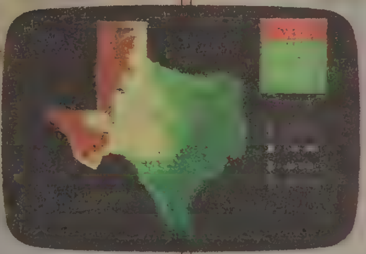

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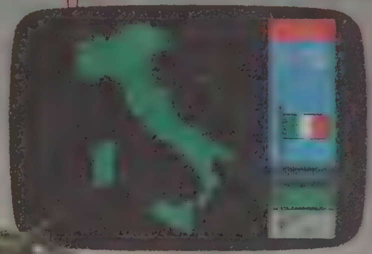

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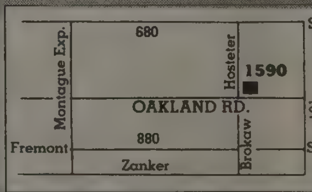

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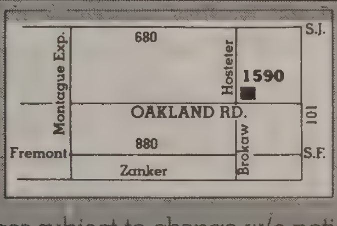

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Battle Of The dBASE Titans

Ashton-Tate Faces Bigger, Stronger Competition

BY WAYNE A. YACCO

Since before the advent of the PC, since the days of C/PM, dBASE has been the standard of microcomputer databases.

Its beginnings are well known. Wayne Ratliff borrowed from a program he knew at the Jet Propulsion Laboratory in Pasadena. He and Jeb Long added, they coded, and dBASE began its earliest incarnation. Within a few months, and with an additional investment of funds and marketing savvy from George Tate, Hal Pawluk and others, Ashton-Tate was created and dBASE was on its way to total, absolute market dominance.

But other firms have dominated their market for years, only to let it slip away: VisiCorp, MicroPro, and Osborne, for example. Now there are rumors that Ashton-Tate may become the latest addition to the infamous list, that program development has faltered, that dissension has risen among the ranks of developers.

Not all is rumor. New competitors have appeared, customers have switched, and the market has been shaken. There are those who question the company's ability to innovate and bring new products to market. Even Ashton-Tate president and CEO Bill Lyons candidly admits the company has had its recent problems. "The whole industry has been languishing for the last couple of years. We're responsible for part of that."

There is no doubt that the company's protracted struggle to bring out a solid version of dBASE IV brought about a crisis of confidence. Today, the company is pinning its hopes for a restoration of that lost confidence on its latest release, dBASE IV 1.1, and on IBM alumnus and high-level development manager David Proctor.

WILL 1.1 TURN THE TIDE?

Proctor is enthusiastic and undaunted by past troubles. He seems to have a precise understanding of how Ashton-Tate arrived at its present juncture, and which path needs to be taken if Ashton-Tate is to reach out to its customer base.

"Clearly," he says, "we had lost a lot of credibility with our ability to deliver products. That was caused by the shipment of 1.0. I think that a bigger problem than shipping it was that we didn't put updates out. I've seen a lot of companies ship products with a number of problems, but if they got updates out quickly enough, they probably contained it a lot better than we did. It took way too long to get 1.1 out.

"Essentially, I was hired to do three things. One was to ship 1.1. Two was to revamp the development process, put together a development process that would deliver high-quality products, and put together a process that was predictable. And the third thing they wanted me to do was to develop a strategy of where we were going with our dBASE product line.

"When I got to Ashton-Tate, 1.1 was ready to ship. Let me tell you what the problem was. The developers didn't know, or didn't think, it was ready to ship. They'd gotten burned on 1.0, and they were trying very, very hard to make 1.1 a perfect product.

"But here in the software world, if you've got a product of any complexity, there are no perfect products. There are very good products. I thought they had one. So I essentially froze the design, got some outside people, and said, 'This looks good to me, what do you think?' We have a database language advisory board. I had them look at it, and pretty much got a unanimous decision. 'Why don't you pack it up and ship it?' So we did.

"I found a good development team at Ashton-Tate. We were a little fragmented—at too many locations. We had some us-versus-them problems between Glendale and Torrance. We consolidated. I closed down the Glendale facility, not without some pain. It's tough when you do those things. But we kept most of the people who were there, and got on with our business. We put together a process. We have regular reviews.

"Since then, in the database side of the business, we shipped the DEC product earlier than we committed to ship it. Then we shipped the Sun UNIX product. In beta test today, we've got the server edition, we've got a Macintosh edition, an SCO UNIX edition, and an edition of RapidFile. We went twenty-two months without shipping a product, and what we're going to do this year is ship a half dozen or more. I think that shows we have tuned the process. We are managing it, and I think that's the key thing we have to do. We have to make the schedules and we have to ship quality products to restore our credibility as a development-software company.

"We've still got work to do. We've got a

Philippe Kahn, Borland

"We're committed to a whole series of products that will help dBASE users get to the next generation of operating environments. It's only a threat to Ashton-Tate if they're not committed to next-generation technology, if they don't support their customers."

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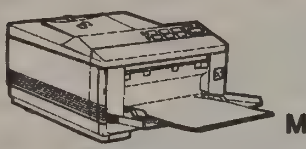

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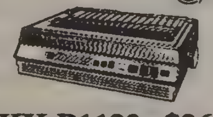

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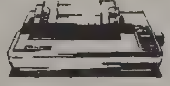

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compiler that's very important to us, the most important product I've got. It's late. That's the number-one priority product that we have. I review it once a week. It's a good product. I'm getting good response back, but we've taken too long with it. My goal right now is, in a fairly short period of time, to get into beta test so I can start getting some feedback from outside people."

Lyons is upbeat about the quality of his product. "The product had a very extensive beta: 2700 users, seven hundred outside of the United States, six to eight months' worth, five or six different builds. All with proactive feedback. The industry in general was skeptical on the product, but we were confident. Because we were confident, we invested heavily in the launch of it. We sent 350,000 free updates out in the first three months. Worldwide, the product has been reviewed and declared stable and reliable. The product is excellent."

DISSENTING VOICES

However, Fox Software's CEO David Fulton says of dBASE IV 1.1: "It's mediocre. It appears to be reasonably solid, but it doesn't do anything as well as our product, I don't believe. It's far from innovative. And given the pace at which they managed to get that one fixed, it doesn't leave me optimistic about their ability to respond to threats.

David Fulton, Fox Software

"dBASE IV 1.1 is mediocre. It's far from innovative. And given the pace at which Ashton-Tate managed to get that one fixed, it doesn't leave me optimistic about their ability to respond to threats."

"Ashton-Tate really has to buckle down and come up with a technically superior product. It's not good enough simply to have one that works. That's not arrogantly saying we're going to do it to them. If we don't, there are at least three other big guys that are going to do it."

Nantucket CEO Larry Heimendinger thinks that dBASE itself is the cause of compiler delays, that some parts of the interpreter simply don't lend themselves to compilation. "They've let themselves get in a situation where their language has some elements in it that are damned difficult, if not impossible, to implement in a compiler. They're stuck because they're saying that you'll be able to develop interactively and then compile."

THE DAWN OF XBASE

If Ashton-Tate should slip again, if a compiler is released and it doesn't handle dBASE syntax, will a large part of the developer community turn to one or more of dBASE's competitors?

In addition to Nantucket's Clipper, Fox Software's FoxBase Pro compiler competes with dBASE. The developers of these products and others want to wrest the future of dBASE from Ashton-Tate's hands. There is the desire to take control of its definition and future development. Some competitors hope that it's too late for Ashton-Tate already, and many members of the community have already taken to referring to the language as xBASE.

There are many issues, though. For one thing, the market for microcomputer database products is segmented. All of the vendors acknowledge this, although they may not exactly agree on what each other's role is in the market.

Nantucket's Heimendinger feels that Clipper is the choice of real programmers, and that dBASE and Foxbase are somewhat akin to programming quiche: good enough for end-users who dabble, but somehow less than satisfying for truly big jobs. "Ashton-Tate has taken dBASE as a product and improved its user interface and its capabilities to the point that it certainly can do the job for the end-user on a very simple, quick-and-dirty application," says Heimendinger.

"I also think they've done a terrible disservice to the language," he continues. "There's no consistency or thought. There's far too many commands. There's far too many options. A human being just can't use them very well. Fox has taken somewhat the same approach. However, they have spent time and effort in FoxPro implementing an easy-to-use and attractive interface for the end-user. Neither Ashton-Tate nor Fox has delivered much power to the serious programmer. Clipper has always addressed that market. It's also proven to be very robust in addressing multiuser applications that run on very large networks.

"The people who use Clipper are professional developers. Fox and dBASE probably share a common group of people, who are often consultants and advisors, who are brought into a company to do a particular job. Generally the applications tend to be smaller in scope. I think that the general rule is that the more critical the application to the business, and the larger it is, the more likely it is to be developed in Clipper than in one of the other languages.

"Clipper is a product designed for developers to create applications for business. It has no user interface. It's not a database product with a language tacked on. It's an application-development environment centered around a robust language. It's purpose is strictly for developers. Clearly, I think that, to date, Ashton-Tate and Fox have aimed their products at end-users."

Clipper isn't waiting for an xBASE standard, but is moving off on its own with features Nantucket thinks will lead the way. The latest version of the Nantucket compiler is 5.0. Heimendinger says its features are "necessary for movement to object orientation. They'll improve the productivity of programmers. They'll improve the robustness of the applications which result from their programming. And the applications will be more maintainable, more customizable, and probably, easier to use because of some of the interface concepts that we're developing. All these things address the real issues, not the technical issues, but the real business issues of what application development is all about: productivity to get the job done faster and better with available talent—and more reliable programs that result from that increased productivity. That's what we're all about."

Fox's Fulton is also sure his own company's star is rising at the expense of Ashton-Tate. He speculates that Fox may have between 15 and 20% of the relational database market, and even more of the xBASE market. "We're by far the largest after Ashton-Tate. There's no question about that. Sometimes, I would say, it's 30-35%. Some months as high as 40%." He's very cagey about sales figures. "In 1990 we sold between 100- and 200,000 units. We're certainly number two in the xBASE market and perhaps number two or three in the relational database market in general."

He doesn't seem to think that the non-xBASE competitors are quite as credible. "Borland has sold a heck of a lot of units, as a result of giving [them] away, but their revenue figures are not nearly as exalted as their unit counts. In the micro business xBASE is in the same relative position that COBOL is in the mainframe business. It is arguably the most commonly used computer language ever: three million users possibly. It is surely the most commonly used business language."

Lyons's view of the market is that of a vendor with a virtual lock on the corporate segment. He wants to keep his company's influence there, and Ashton-Tate is working with its corporate users to meet their needs first. The highest priority is on enterprise-wide data access and networking. But he also fore-

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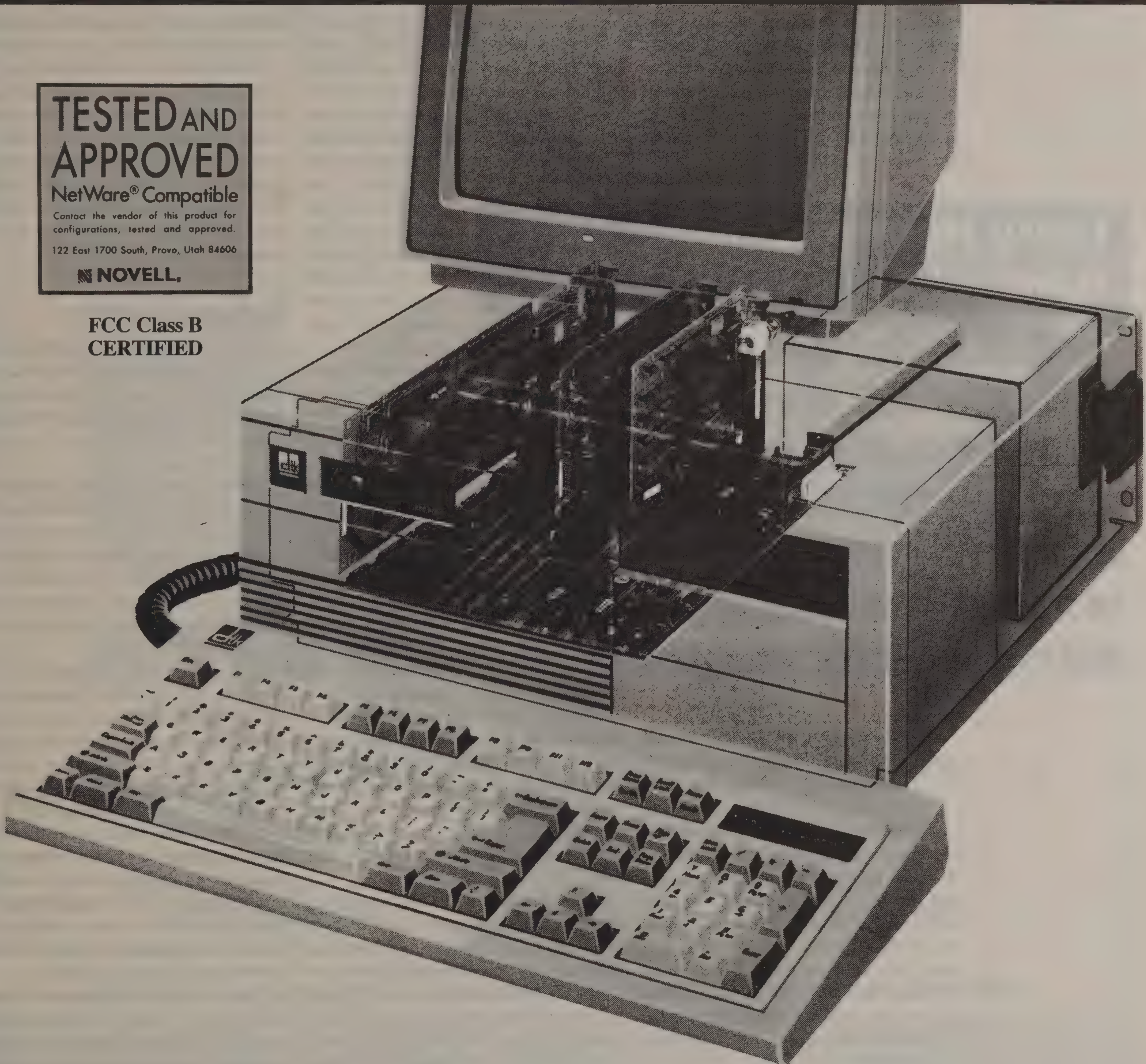

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sees a market large enough to support an extensive development-software community.

"We don't view it as a zero sum game. We think that the entire industry can grow. We'll grow with it. We'll be a major player. It will be good for us, the developers, the infrastructure, the trainers, the consultants, the entire industry. You see sixty million PC users quickly going to a hundred million, and the power of PCs moving to '486es. Multimedia, sound, animation, and full-motion video are all becoming data types of a sort. The whole category has an awful lot of opportunity. The momentum is going to switch there as people just have more and more different data types to manage.

Larry Heimendinger, Nantucket

> **"Neither Ashton-Tate nor Fox has delivered much power to the serious programmer. Clipper has always addressed that market. It's also proven to be very robust in addressing multiuser applications that run on very large networks."**

"We want to provide the end-user with the ability to access, manipulate, and present data. Let him get that data regardless of its location without too many traffic cops keeping the keys in the corporate vault. Get that data down to the desktop or the workgroup. Allow the professional to manipulate that data and turn it into information. We think that he should be able to do that on a variety of operating systems and hardware platforms. We want to be the easy-to-use front end that tames this world in the dBASE format. I'm very bullish on Ashton-Tate returning to the growth-oriented, high-tech status that it had before."

OTHER CHALLENGES

Lurking in the shadows are Borland and Microsoft. Microsoft is hard at work on a database product for the Windows environment. More than that the company's spokemen will not say. But it doesn't seem likely that a Microsoft product will feature the xBASE language.

Heimendinger is doubtful that competition from Microsoft or spreadsheet giant Lotus is coming any time soon. "I consulted with both Microsoft and Lotus before coming to Nantucket. For goodness sakes, they've been at it for the better part of half a decade, trying to create a database product, and they still don't have one. And creating a database product is a long way from creating an application-development environment."

Nevertheless, non-xBASE competitors already exist. The whole world seems to be moving to Windows, and there are a couple of contenders there already. One of them, Blyth's Omnis, has a strategy aimed right at Ashton-Tate's corporate customer base. In fact, the two product strategies have a number of similarities. Each is multiplatform and emphasizes networking and enterprise-wide data access. And Omnis already has a presence in the Macintosh market that features on-site development support for corporate customers.

Borland's Paradox is another non-xBASE competitor that's growing in popularity. It is already a strong contender for the end-user/developer market—with more emphasis on "end-user" than "professional developer." Programmers use PAL, not the xBASE language, and have an easier access into a variety of corporate databases. Borland estimates the program's share at 25-30%. Market share is garnered with a number of strategies: Borland offers a dBASE-to-Paradox conversion guide; it supports third-party training; and it offers Paradox to current dBASE users at unusually large discounts.

Now Borland has introduced ObjectVision. The company's focus is on object-oriented programming, but Borland has a history of offering flexible interfaces that users can use in whatever way suits them.

Is xBASE syntax likely? If you want to elicit a bone-numbing response from Borland's CEO, ask him if he's building a dBASE clone.

"Borland doesn't do clones," Philippe Kahn will answer frostily. "We don't do that. We provide next-generation functionality to classes of users. ObjectVision is capable of front-ending dBASE files in a multiuser environment under Windows. That's something we debated, because we have Paradox support, we have Btrieve support, we have dynamic data exchange support, and we connect to SQL Server through Paradox. We wondered, 'Do we need dBASE?' and dBASE users said, 'Please, give us something that really can help us bring our dBASE apps under Windows.'

"ObjectVision deals with declarative programming: the ability to visually create dBASE-types of applications. That's the first step. We're committed to a whole series of products that will help dBASE users get to the next generation of operating environments. We are committed to providing such solutions for those who still want to use the dBASE language. It's going to be a superset of what people expect from a dBASE product."

Oh. Will it be a threat to Ashton-Tate? "It's only a threat to Ashton-Tate if they're not committed to next-generation technology, if they don't support their customers. The only reason we're doing this is because their customers are really asking us to do it. A lot of their customers are now switching to Paradox, but they still have some apps and programmers who know dBASE."

COPYRIGHT WARS

Is the future of Ashton-Tate really in doubt? If so, does that doubt extend to the dBASE language itself? The company's latest legal reversals have led to speculation that its products may no longer be protected by copyright law. [See sidebar]

Fulton's position is clear. "Any reservations regarding language ownership or access that may have existed before the outcome of our recent litigation with Ashton-Tate seem to have vanished. I think the real winners are the users, because they're going to be able to choose among many implementations of the language.

"Let's speculate that Microsoft, Lotus, and others entered this xBASE-language market," says Fulton. "Those companies, many of them, know how to solve technical problems, and some of them know how to market. It's clear to me that Ashton-Tate has forevermore lost its leadership position."

But Ashton-Tate executives see the fight as far from finished. "We have no choice but to appeal that [copyright ruling] to completion," Lyons vows. We're confident that we're going to win—but we have to do that—and nothing else can happen until that's done. I'd rather pursue a business solution."

This was, and is, also departed CEO Esber's position. "We at Ashton-Tate were always in favor of the dBASE language becoming a standard. We only wanted to be compensated for the tremendous amounts of money we spent in developing the product and the market."

Suggest that the validity of Ashton-Tate's copyrights will be upheld but that its infringement suit will not be, and Proctor has a ready response. "It'd be business as usual. That's the business we have today. We're competing with them. Our goal is to get the copyright issues settled, and then work a business solution for the rest of this thing. That's what we were trying to do before the judge made this ruling. You want to make it a

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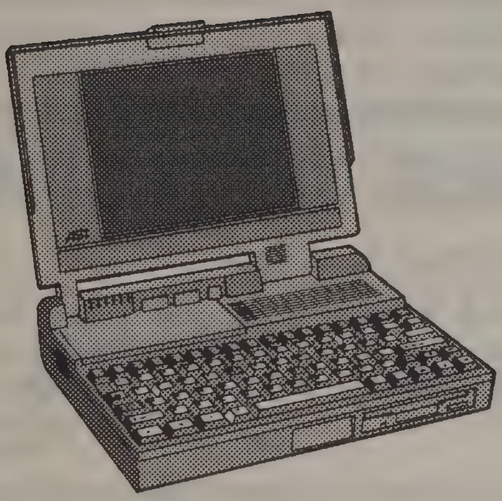

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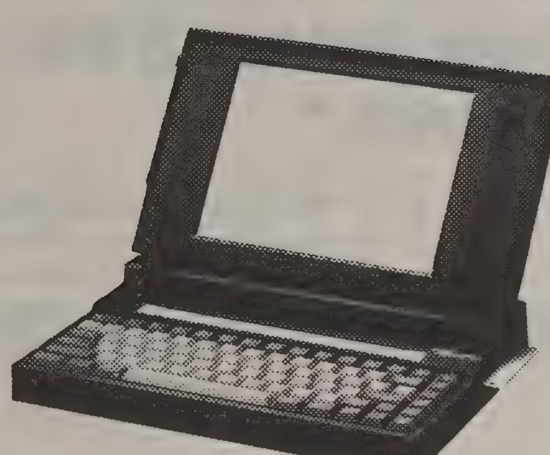

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Bill Lyons, Ashton-Tate

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win-win situation—one that's reasonable for both parties. I think Bill Lyons has taken the initiative to try to make that happen."

ASHTON-TATE'S DIRECTION

Wayne Ratliff still watches Ashton-Tate's progress from his new home near San Luis Obispo where he also continues to develop applications in the dBASE language (although in his own Emerald Bay's Vulcan). He has a blueprint for Ashton-Tate's success. "What Ashton-Tate needs right now is adventurous, innovative spirit. Just trying to do a better job with what they have is not likely to win the day." Ratliff's record of Ashton-Tate predictions is good. When dBASE IV 1.0 shipped, Ratliff remarked, "Ed Esber once told me that he didn't really need great products. He could use mediocre products, and with the marketing clout and money behind Ashton-Tate, he could make it go with that. Now his work's cut out for him. He has his opportunity to prove it to me."

While Ed Esber has left day-to-day management at Ashton-Tate, his legacy survives in his hand-picked management team. Lyons and Proctor are working hard to restore the company's ability to develop products. They appear to be listening for the heartbeat of their user base. Certainly, today, there is an emphasis on morale. The lobby at Ashton-Tate is decorated with customer testimonials to the support staff. Proctor claims, "People are having fun again."

Of course, no matter what Ashton-Tate does next, not everyone is going to be happy. But if the company can provide products that the market wants, there's every reason to expect Ashton-Tate to retain its present position in the industry despite all of its challenges. Proctor says, "We plan to ship a Windows product this year. I reviewed a demo of it yesterday in my lab in Torrance. We want to continue to be the number-one database-management system for PCs—expand that role into the workstation side of the UNIX market. We want to be the number-one product in the LAN environment. We want to be used as the number-one tool for people who are developing business applications. And, finally, we want to be the number-one front end. It's an oportunity for a lot of business."

And the dBASE language? Whether you call it dBASE or xBASE, its massive presence in our industry can't be undone overnight. It's still the biggest game in town. ■

DBASE IN THE COURTS

By Michael M. Krieger

On November 18, 1988, the last day of COMDEX, Ashton-Tate heated up the copyright wars by suing both Fox Software and The Santa Cruz Operation for copyright infringement and unfair competition. The result was unexpected: on December 11, 1990, US District Court Judge Terry J. Hatter (Central District of

Continued on page 117

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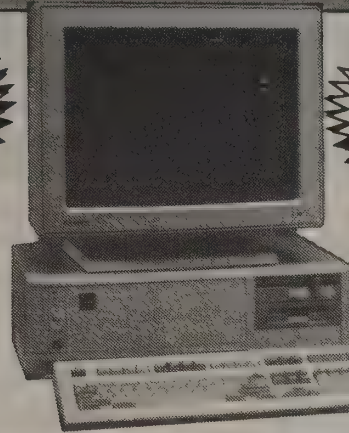

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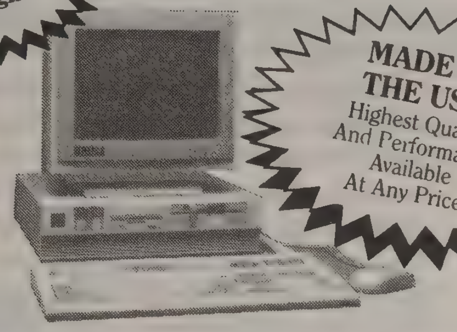

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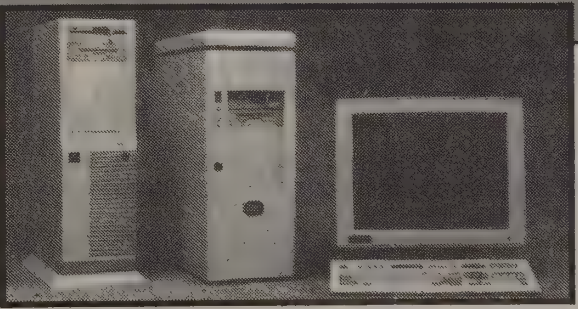

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California) invalidated Ashton-Tate's copyrights in dBASE with a one-page order.

Not just a worst-case nightmare for Ashton-Tate (and dream-come-true for some dBASE developers and the assembled A-T critics), this extraordinary reversal sent tremors through a software copyright world accustomed to the somnolent pace of legal battle.

Giving little factual or legal basis for his minimalist order, Judge Hatter effectively adopted patent law's doctrine of "inequitable conduct". To receive a patent, the applicant is obligated to inform the US Patent Office of everything relevant (known as the "prior art") which might assist its examiner in deciding whether the invention meets the standards of patentability. Failure to bring such information forth can lead to later invalidation of the patent as being inequitably (unfairly) or even fraudulently obtained. Such a heavy disclosure burden is fitting, because the government's grant of a patent gives the holder a very strong monopoly, the right to prevent others from using his or her idea. It is little surprise that patents are typically granted only after a multi-year evaluation that will have cost the applicant thousands of dollars.

In contrast, copyright—which by definition exists in a work from the moment it is "fixed in a tangible medium of expression"—addresses only copying (and near-copying). It does not prevent someone else from exploiting a like or even identical work, so long as it was created independently. Registration is a correspondingly simpler process, requiring only that the official two-page form be filed with a copy of the work (or partial copy in the case of software) and a $20 fee (up from $10 in 1990).

By importing the patent standard, Judge Hatter was exercising the equitable powers of the Court, i.e., the Court's inherent ability to do what is fair within, or in the absence of, controlling law. He asserted that Ashton-Tate deceptively omitted mention of a public domain precursor of dBASE, JPLDIS, in its copyright filings. Even assuming cause for his apparent outrage at Ashton-Tate's conduct, few observers would have predicted Judge Hatter doing more than cancelling the dBASE registrations, thereby leaving the copyrights still intact.

Registration is required to enforce copyright infringement actions in court. Registration within five years of publication gives a plaintiff the right to collect statutory damages (i.e., those amounts made explicit in the copyright law and available without any need to demonstrate financial harm). Thus, decades after publication of a still-unregistered work, the holder of its copyright can bring an action, just as soon as he/she finally registers. But in such a case, assuming the infringement claim is proved, actual economic loss would have to be shown to recover any money. Had Judge Hatter only invalidated the copyright registrations, an interesting question would have arisen as to whether Ashton-Tate could re-register, perhaps too late for the five-year benefit but still regaining the right to litigate for actual damages.

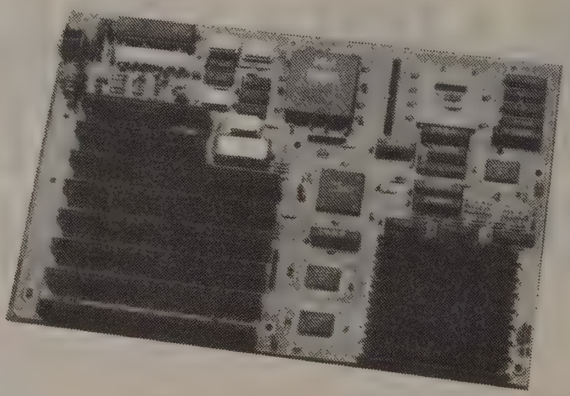
Current status of the case: Ashton-Tate is now appealing to the Ninth Circuit Court since Judge Hatter denied its motion to reconsider his order. He did make a ruling granting the company's request to stay the order, thereby leaving the copyrights intact while the litigation is pending.

What outcome is likely? An informal survey of computer/copyright lawyers yielded few willing to conjecture. Most find Judge Hatter's move excessive, especially since A-T's acknowledgment of JPLDIS in the dBASE II and III manuals runs counter to the charge of malevolently concealing dBASE's origins.

For procedural reasons, the Circuit Court will review the appeal "from scratch" rather than return the case to Judge Hatter for clarification. It seems unlikely that the Court would simply overturn him on the grounds that it was bad law to use the patent standard; that itself could create a bad precedent about a District Court's equitable power. Rather, the Ninth Circuit might sustain the order, paving the way to the US Supreme Court for Ashton-Tate.

Certainly the long-term health of the software industry requires resolution of the underlying questions over which Ashton-Tate and others are battling—protectability of languages and the scope of "look-and-feel." This is only likely if these seminal issues are litigated in the present or some other case all the way to the Supreme Court, which could either clarify the law or invite Congress to do so. Meanwhile, software developers, business people, and lawyers can only tremble at a potential Pandora's copyright box: retroactive application of new copyright disclosure standards. ■

Michael M. Krieger is a Los Angeles attorney whose practice is devoted to computer and other high technology business transactions, especially software development, distribution and licensing, both domestic and international.



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ECI 386-33MHz
64K Cache System
104MB Hard Disk
$1595

- Landmark =59 SI =46
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- Math Co-processor socket
- 1 x 32, 6 x16, 1 x 8 bit slots
- 1.2MB or 1.44MB Floppy Drive
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- Math Co-processor Socket
- 1 x 32, 6 x 16, 1 x 8 bit slots
- 1.2 MB or1.44 MB Floppy Drive
- 1=1 Interleave HD/FD Controller
- 40MB 28 ms Hard Drive
- I/O 2 serial, 1 parallel, 1 game
- Real time clock w/battery backup
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- 101 keyboard
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- Case w/Power Supply

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- AMI BIOS
- EMS-LIM 4.0 on Board
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- Choice: Regular Baby Case or Small Vertical Case

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Panasonic KX-1624	375
Star NX-1000 II	148
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Trident w/1Meg	140
FD/HD 1:1 Controller	70
AT I/O (2S;1P;1G)	28
XT Multi I/O	39
Floppy Controller (360, 720, 1.2, 1.44K)	35
Floppy Controller (360K)	16
XT-H/D Controller	50
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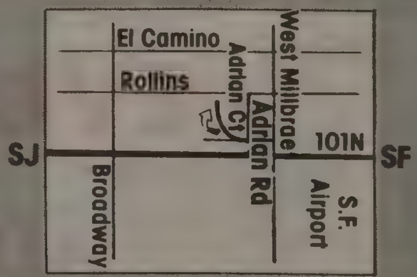

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In a time where database management systems are now found on everything from micros to mainframes, potential database users are facing some challenging questions. Should they keep their mainframe or downsize to LANs and workstations? How do you implement CASE and which methodology would be best for your system? What exactly is an object-oriented database? The solutions to these questions and many more can be found at DB/EXPO '91—the National Database Exposition and Conference.

Now in its third year, DB/EXPO has become the largest gathering of database professionals in the world. Featuring over four hundred exhibits, one hundred speakers and attendance of ten thousand, the show will convene at the San Francisco Moscone Convention Center March 26-28.

The show will be highlighted by two concurrent conferences. The Technical Conference, designed for MIS directors, system engineers and analysts, and DBAs, will offer the latest information in emerging database technologies. Topics will include object-oriented, imaging, client/server, and distributed databases, relational DBMSes and interoperability. Over twenty-five different sessions will be offered during the conference, led by experts like Dr. E.F. Codd, Chris Date, Jeff Tash, Richard Finkelstein and DB/EXPO '91 Conference Director Colin White.

The new PC Database Development Forum will give PC managers, programmers and developers a chance to see and hear the latest innovations in the xBase (dBASE compatible) language technology, GUIs, multimedia, servers, multiuser environments, host gateways, and database dictionaries. The Forum itself will be divided into two segments—the xBase Language Conference and the PC Database Conference. Pat Adams, Adam Green, Tom Rettig, Wayne Erickson and Arun Gupta are among those who will host over forty sessions aimed specifically at the PC user.

The Exposition Hall will allow end-users to talk to all the major suppliers of database-related technology, such as Ashton-Tate, Borland International, Computer Associates, IBM, Oracle and Microsoft. Exhibiting companies will be demonstrating a variety of mainframe, mini, UNIX and micro-based products, including multimedia and imaging systems, CASE tools and repositories, workstations and graphical user interfaces, knowledge-based and natural language products and database and system administration tools.

DB/EXPO '91 will also offer Keynote Addresses, Press Conferences, User Group Events, Industry Publications and six free Tutorial Sessions taught by some of the biggest corporate names in the industry. A different tutorial theme will be presented each day of the show. Tuesday, March 26 will be Mainframe Day; Wednesday, March 27 will be UNIX and Open Systems Day; and Thursday, March 28 will be Tools and Connectivity Day.

On March 25, prior to the beginning of the expo, two one-day in-depth seminars will be held. Author and lecturer Chris Date will host "What to Look for in a Relational DBMS." Vaughan Merlyn, Chairman of Case Research Inc., will be speaking on "CASE: Managing the Human Issues."

DB/EXPO '91 is a crucial resource for anyone associated in the database industry. If you would like to pre-register for the exhibits, the conferences, the one-day seminars, or would just like more information; please contact Norm De Nardi Enterprises at 1-800-2DB-EXPO. Or stop by the Moscone Convention Center on March 26-28. Exhibit hours will be from 11 am to 5 pm; conference hours are from 8:30-5. Also available is a coupon for free admittance in this issue's DB/EXPO '91 advertisement.

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Addison-Wesley Publishing	1003
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Aion Corporation	831
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Ashton-Tate	230
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Continued on page 107

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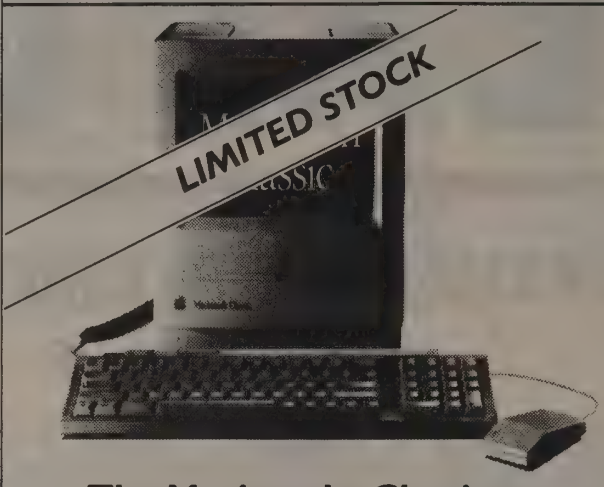

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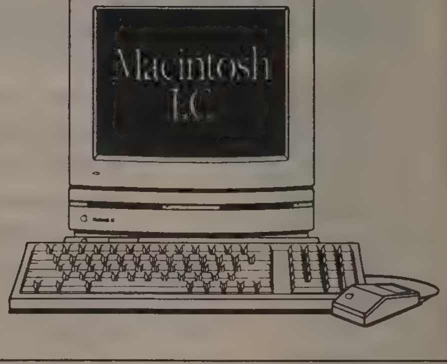

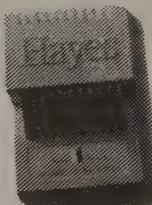

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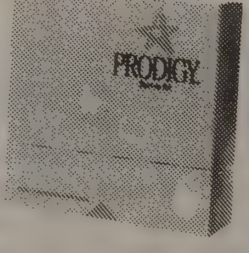

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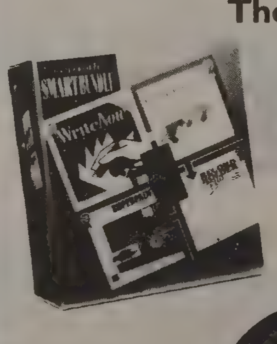

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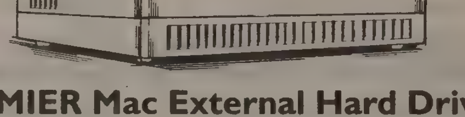

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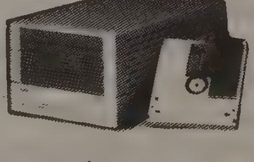

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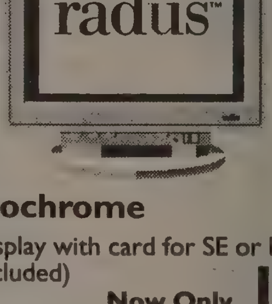

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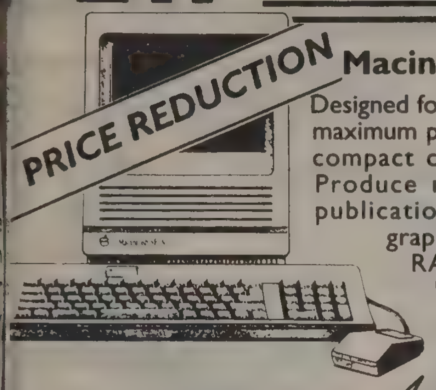

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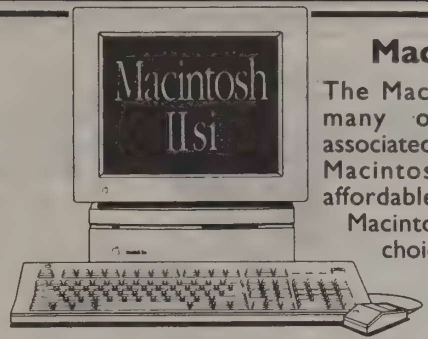

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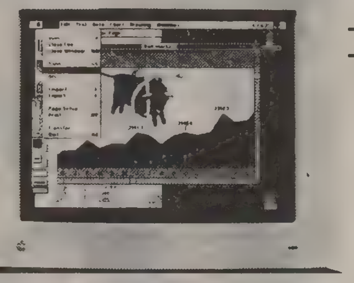

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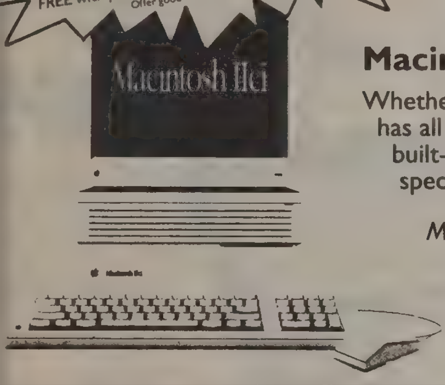

Macintosh® IIci

Whether you crunch numbers, sort data, process words or design products, the IIci has all the features you've come to expect from Macintosh. What's more. its built-in video support lets you work with a variety of monitors to display a spectrum of colors or shades of gray without adding a video card.

M5737 LL/A comes with 4MB RAM and FDHD® drive. Keyboard and Monitor extra.

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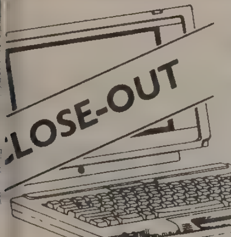
PRICE REDUCTION

LaserWriter II NT

With 35 internal fonts, 2 MB RAM, and PostScript, the LaserWriter II NT yields professional quality documents quickly and easily.



LOSE-OUT

The Outbound™ Laptop integrates easily into any Macintosh office. Once Whole Earth Access transfers the ROM chips from your Mac Plus to the Outbound Laptop, you will have both the lightest Mac-compatible laptop available, and an enhanced Macintosh desktop system

utbound Laptop

lacintosh Plus I/F w/40 MB Hard Disk

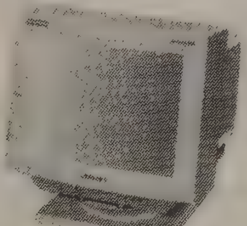
acintosh computer not included

Only 2 at this price.

2495.

SONY

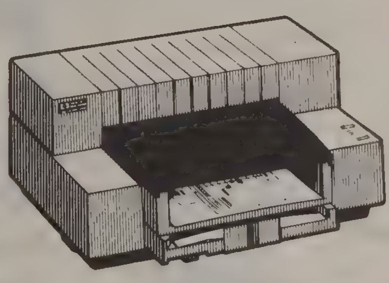
ony 1304 HG



ilt and swivel • Analog cable
1024h 768v • .25 dot pitch • VGA,
CGA, Mac II & 8514A compatible

669.

HEWLETT PACKARD



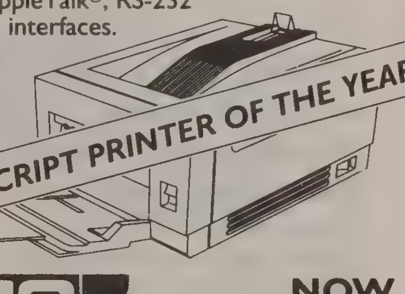
Deskwriter Printer

Hewlett-Packard's Deskwriter printer, now AppleTalk compatible, brings laser-like quality to the Macintosh line.

639.

QMS-PS 410

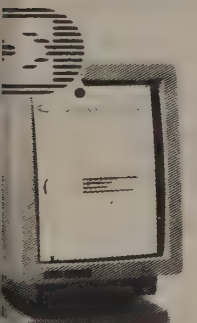
It's true Adobe® PostScript®, and you can take data automatically and simultaneously from the AppleTalk®, RS-232 and parallel interfaces. 45 resident typefaces, including Garamond.



POSTSCRIPT PRINTER OF THE YEAR

QMS™

NOW IN STOCK

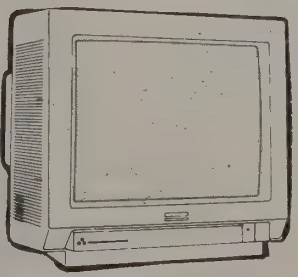


PageView for Mac II, SE, SE/30 & for MS-DOS PC Machines

- 15" flat screen portrait monitor with three user selectable screens
- Resolution 72 dpi, 80 dpi, 88 dpi
- Refresh scan rate of 97 HZ

849.

ageView for
lac IIsi **749.**



NEC

MacSync

•640h x 480v resolution • .29dp • 14" diagonally with cable and tilt swivel

469.

PLENTY OF TONERS, INKS AND RIBBONS IN STOCK...

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BEST PRICES

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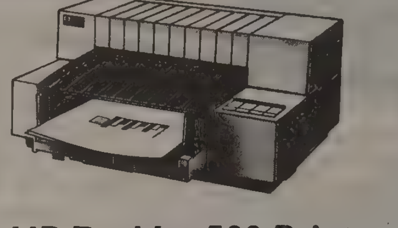
"HP Leads the Revolution in Resolution"



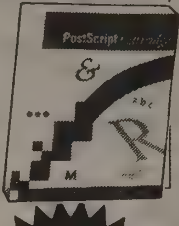
HP DeskJet 500 Printer

- Improved print quality
- Added internal fonts
- 3 year warranty
- Wate

resistant ink cartridges.

489.

ADOBE POSTSCRIPT CARTRIDGE
-LaserJet II Owners-You can now enjoy all the benefits of true Post Script software from Adobe **299.**



Now Available

Hewlett Packard AppleTalk for LaserJet III

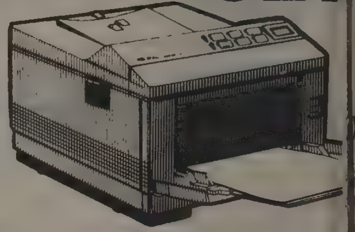
HP LaserJet III Printer

- Now Hewlett-Packard LaserJet Printers are PC or Macintosh compatible
- AppleTalk® compatibility with optional interface
- Dependable HP performance.

HP LaserJet IIP Printe

- Most affordable HP Laserjet prir
- Publication quality output.

829

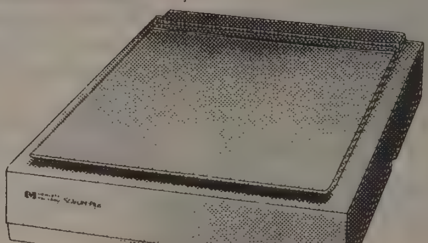


HP LaserJet IIP / PostScript Printer

- Fast 4 PPM printing
- 1.5 MB RAM—includes PostScri
- Macintosh ready/ plug 'n play

#33427A

1495



HP ScanJet Plus Scanner

- 256 grey scale levels (8 bit) for high-resolution images
- Wide range of contrast & intensity control
- PC

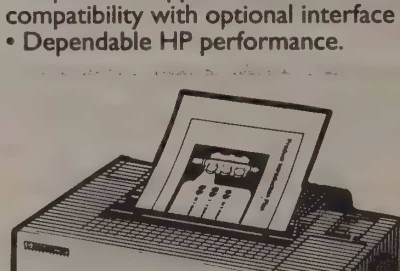
Macintosh compatible • Price includes interface.

1495

HP PaintJet Color Graphics Printer

- High quality color charts & graphics
- PC or Macintosh compatible
- Wide range of software support.

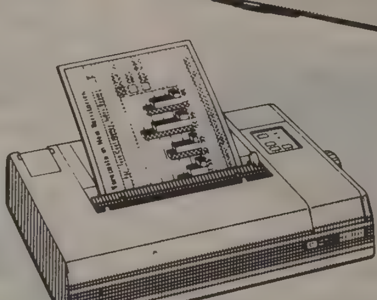
795.*



HP PaintWriter Color Graphics Printer

Made for Macintosh Personal Color Printer

- 3 times faster than HP PaintJet for Macintosh applications
- Bolder output colors
- New color software tools

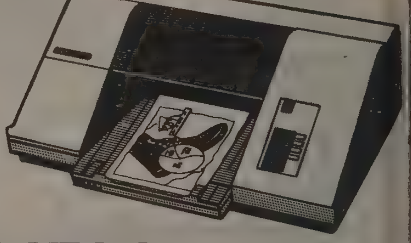


795.*

HP PaintJet XL Color Graphics Printer

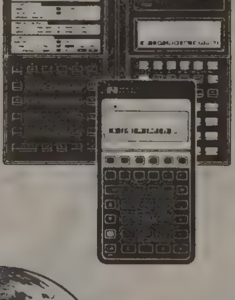
- Enhanced PaintJet quality
- Faster print speed
- Presentation mode- for highest quality graphics on paper
- Transparency mode.

IN STOCK



* After $200 manufacturer's rebate. See stores for details. Rebate ends May 31, 1991. Quantities limited to stock on hand. Errors subject to correction.

HEWLETT PACKARD Calculators



HP 17BII Financial Calculator

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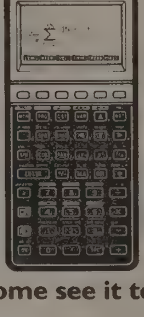
Take the lead with HP's best financial calculators.

- Complete set of financial functions
- Menus and softkeys to guide you
- Algebraic or RPN entry

Come see it today.

HP 19BII Financial Calculator..... 149.



Come see it today.

HP 48SX Scientific Expandable Calculator

Power-users— take the lead with the new HP 48SX!

- Over 2100 built-in functions
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- Graphics integrated with calculus.

HP calculators- the best for your success. **325.**

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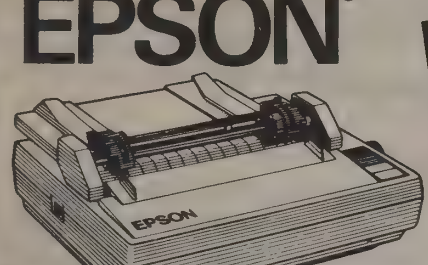
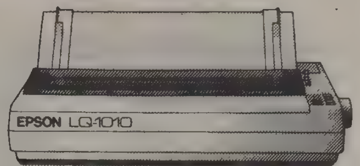


X-810

) pin • SmartPark™ paper handling • 200 PS super draft • 30 CPS LQ • High resolution aphics.

179.

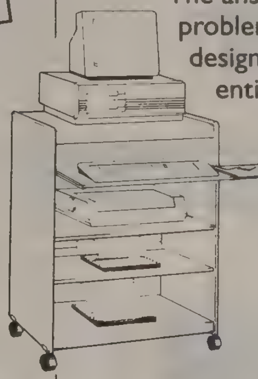


LQ-1010

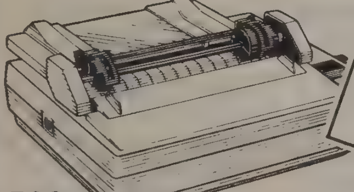
• 180 CPS draft, 60 CPS letter quality • 24 pin, 360 x 360 dpi graphics • SmartPark™ and SelectType • Wide carriage

429.

All-In-One Mobile Microcomputer Center



The answer to your storage problem. This space saver is designed to organize your entire microcomputer system- including your printer- in less than three square feet of floor space. Crafted from wood solids and matching veneers, this is a high quality solution for your computer furniture needs.

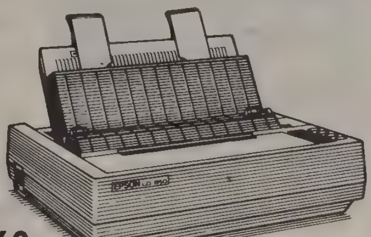


FREE MULTI-MODE FONT WITH PURCHASE OF LQ-510

Q-510

Featuring SmartPark™ paper handling • 180 PS draft • 56 CPS letter quality • 2 resident tter quality fonts

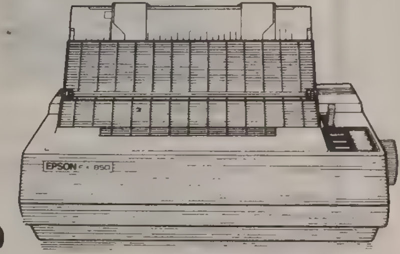
285.



LQ-860

Epson's newest letter quality color printer • 300 CPS draft • 98 CPS NLQ.

IN STOCK

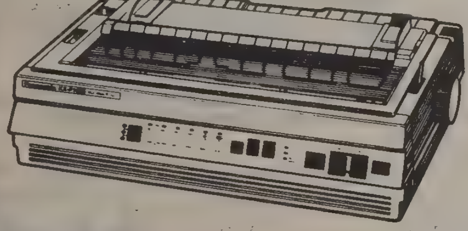


FX-850

• 9 pin dot matrix • 264 draft 54 NLQ • Push tractor paper park for single sheet feed.

369.

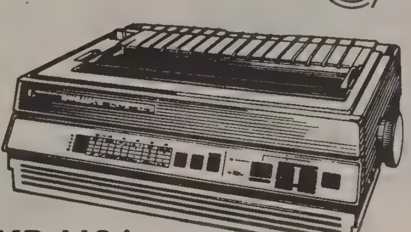
Panasonic
Office Automation OA



KXP-1695

• 9 pin • EZ set control panel • 330 CPS draft • 66 CPS NLQ • 8 resident fonts • 16.5" wide carriage • Push/pull tractor • rear, bottom and front paper feed.

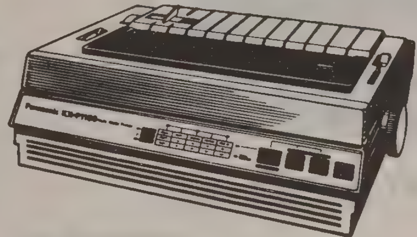
395.



KXP-1124

• 24 pin • EZ set control panel • 192 CPS draft • 63 CPS NLQ • 7 resident fonts • 11.7" wide carriage • Push/pull tractor • 360 x 360 dpi

AVAILABLE



KXP-1180

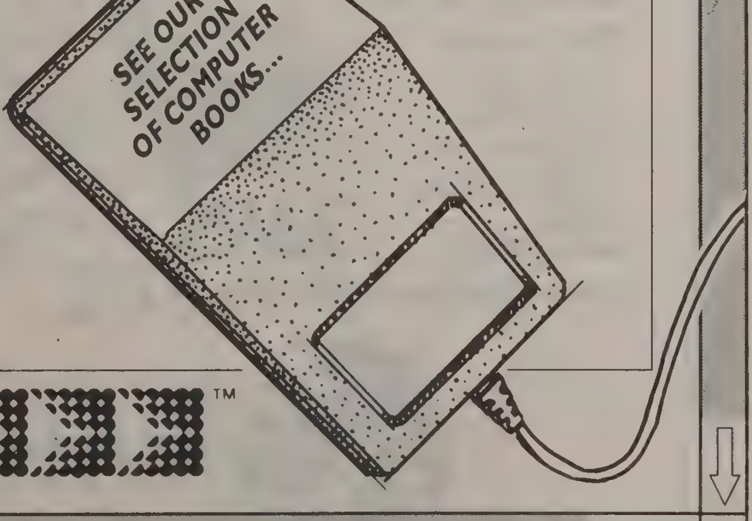
• 9 pin • EZ set control panel • 192 CPS draft • 38 NLQ • 6 resident fonts • Push/pull tractor • 11.7" carriage.

149.

WHOLE EARTH NOW CARRIES:

maxell.

We now carry a full selection of Maxell brand printer ribbons. Long lasting and reasonably priced, Maxell ribbons are designed to fit the most popular printers available today. **Come in and check it out!**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IBM Business Partner
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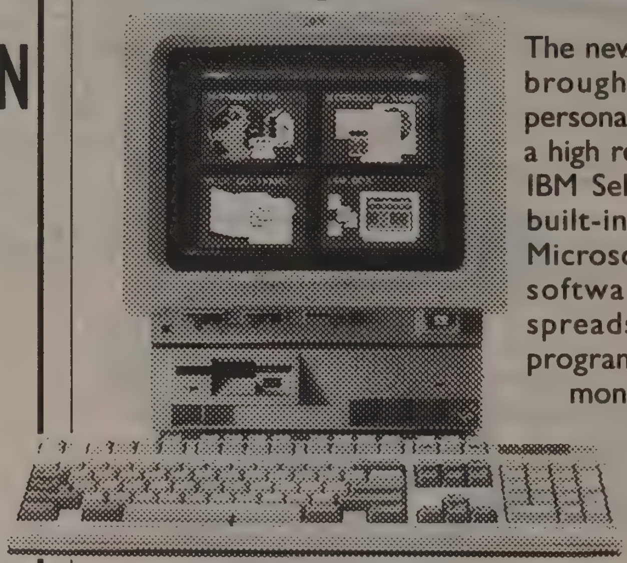
IBM

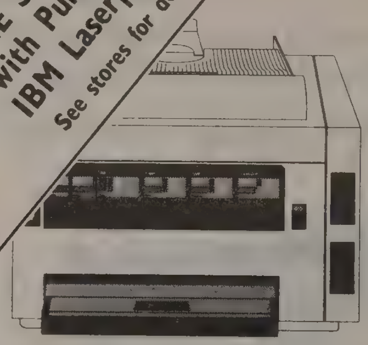
Bring It All Back Home with the IBM® PS/1™



The new IBM PS/1 is the ultimate home computer brought to you by the people who defined personal computing. Right out of the box you get a high resolution VGA Photo Graphic™ display, an IBM Selectric Touch™ keyboard, a mouse and a built-in modem. Plus you get IBM DOS and Microsoft Works®, the best selling integrated software package with word processing, spreadsheet, communications, and database programs. You also get, at no extra charge, 3 months free of the Prodigy® service for home shopping, banking, travel arrangements and more. This is an easy to use computer at an affordable price. Come see it in action today at Whole Earth Access.

STARTING AT 1399.
ALL STORES

FREE SOFTWARE with Purchase of IBM Laserprinter
See stores for details



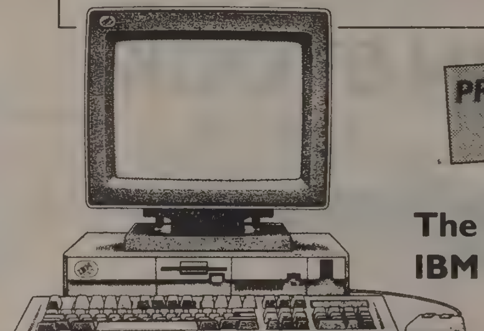
IBM Laser Printer

- **10 pages per minute**
- HP comp.

1595.

4019 IBM
All Stores **Laser Printer E 1029.**

PRICE REDUCTIONS ON PS/2's !

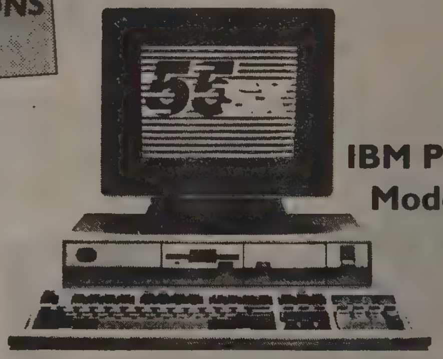


The Best for Less.
IBM PS/2® 30-286

- 10 Mhz 80286 processor
- 1 MB RAM expandable to 16MB RAM
- 1.44MB floppy drive
- VGA graphics on board.

Monitor extra **1249.**

PS/2 30-286 30 MB **1599.**



IBM PS/2
Model 3

- 80386SX 16 Mhz processor • VGA on boar
- 2MB RAM expandable to 16MB • 30MB har drive.

Monitor extra **2149.**

PS/2 Available in Berkeley and San Jose Stores Only

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SHARP

Only 4.4 lbs!

SHARP PC-6220 NOTEBOOK
VGA DISPLAY

- 12 Mhz 80286
- VGA paper-white LCD display
- 20MB hard drive
- 1 MB RAM • DOS 4.01 and laplink in ROM.

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Come See This Amazing Little Computer

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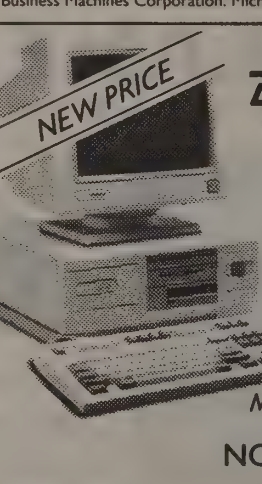


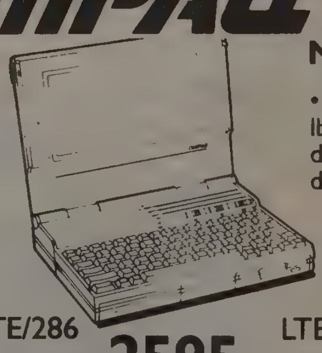
COMPAQ DESKPRO 386s

COMPAQ

Built around the revolutionary 80386SX processor, the DP 386S delivers 386 performance at a non-386 price.

Monitor extra **1895.**

NOW WITH 2MB RAM



COMPA LTE/28

Model 40

- 8.5" x 11" & onl lbs. • 1.44 MB flop drive • 40MB hard drive..

284

LTE/286 Model 20 **2595.**

LTE Model 20 **184**

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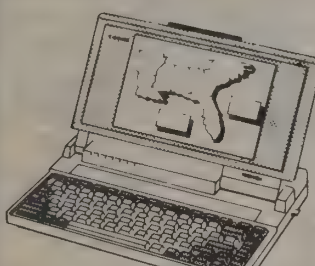
We feature Megahertz modems for the Toshiba family of computers.



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High performance portable computers for today's executive on the move.

999.

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See Stores For Details and Coupons
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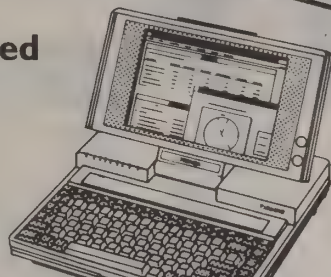
Power Packed T1200XE

Carry 286 hard disk power in your briefcase.

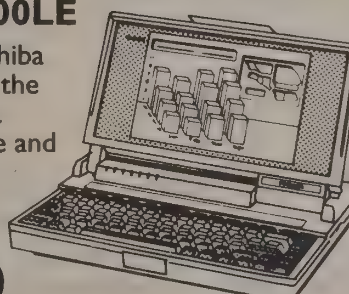
2149.



Toshiba 1000LE

The newest Toshiba Notebook with the hottest features. 20MB hard drive and a 1.44MB floppy drive.

1699.



Toshiba T2000SX/20

- Toshiba's most powerful notebook computer • High performance—386SX™ processor • Super ergonomics / only 6.9 lbs.

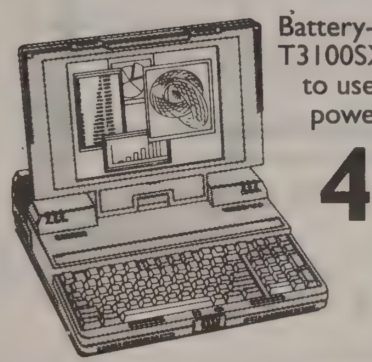
NEW

Limited Supply **3499.**

Toshiba T3100SX/80

Battery-operated T3100SX Freedom to use 386SX power anywhere.

4199.



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The Poqet PC™

Everything you need, in a size you've always wished for • 2-3 months of normal use on two AA alkaline batteries
- MS-DOS 3.3 runs your favorite PC software
- 80-character X25-line screen • LCD display with monochrome graphics
- Built-in productivity tools.

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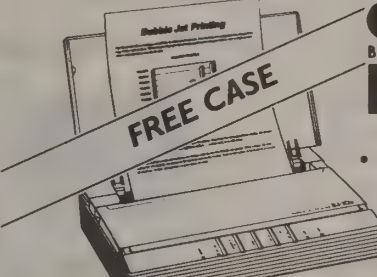

FREE CASE

Canon BUBBLE JET PRINTER

BJ-10e

- Portable 300 dpi printer
- Optional sheet feed.

349.

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Apricorn Memory

- Lifetime warranty • Available for all Toshiba portables
- This month's special.

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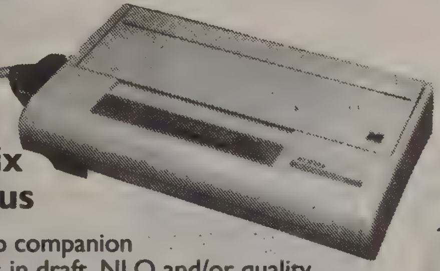
Kodak



Kodak Diconix 150 Plus

The laptop companion that prints in draft, NLQ and/or quality mode, designed with potability in mind.

379.

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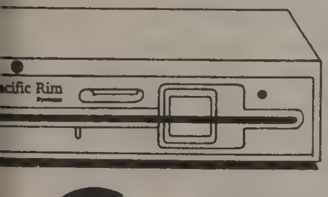
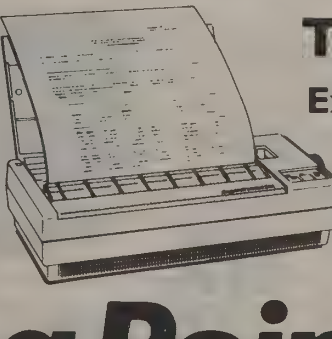
Pacific Rim Systems



Pacific Rim Systems' external 3.5" and 5.25" floppy drive subsystems are available for every PC
See stores for the model you need!



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Express Writer 301

Letter Quality.

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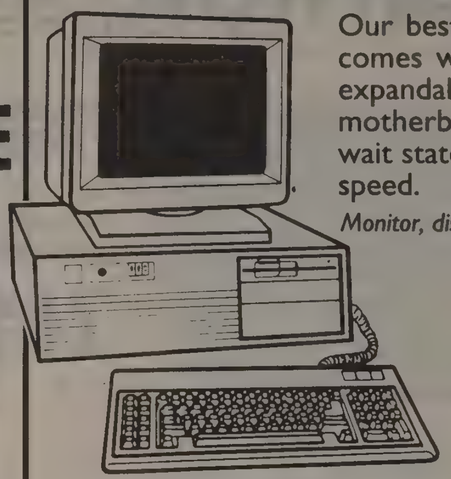

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Our best selling Turbo 286 comes w/512K of memory expandable to 4MB on the motherboard. 16 Mhz at 0 wait states means maximum speed.

Monitor, display card extra

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386SX

- 16Mhz 386SX
- IMB RAM
- 1.2MB floppy
- 1:1 hard drive controller IDE
- 101 keyboard
- 2 serial 1 parallel port

595.

WEA S486-2
Standard

- 4MB RAM upgradable to 8MB on motherboard; 16MB w/32 bit memory card
- I/O, 1.2MB FD, 10 keyboard • IDE controller
- Desktop case
- AMI BIOS
- 64 K RAM cache, upgradable to 256K
- 1-32/8 bit slot
- 6-16 bit slot
- 1-8 bit slot
- Weitek math co-processor socket.

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"Night Shift"
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FREE with Purchase of a Complete* VGA ComputerSystem. Offer good while supply lasts.
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386/20

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- True 20 Mhz 386 motherboard
- 1:1 HDC • 1.2 FD • 101 keyboard
- IMB RAM

386/33 Mhz

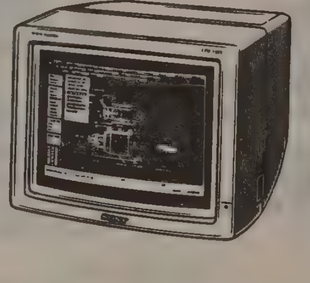
- IMB RAM • 1.2MB floppy drive
- 1:1 hard drive controller
- 64k cache • 101 keyboard

1095

MONITORS

SONY

Sony 1320 VGA



- VGA color monitor
- Analog input
- .25mm aperture grid

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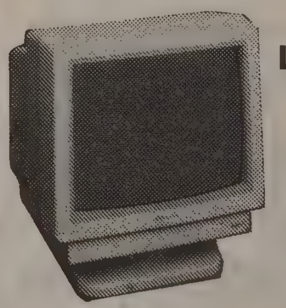
HCM-402C

- 14" VGA color
- .31 dot pitch
- Includes tilt & swivel base

BEST PRICE



Leading Technology 1428S

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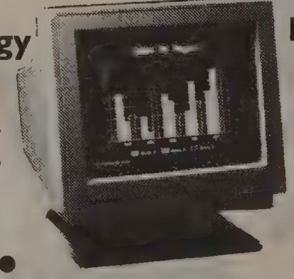

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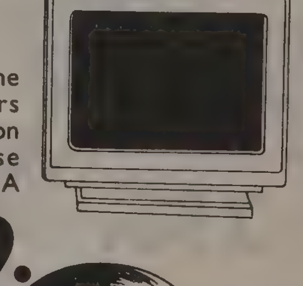

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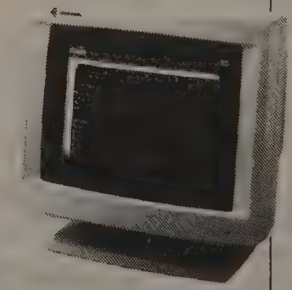

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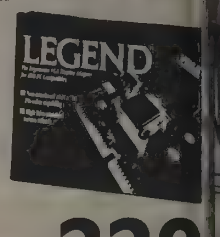

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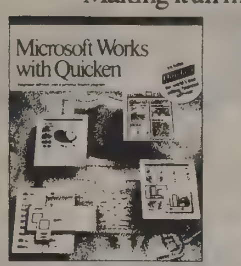

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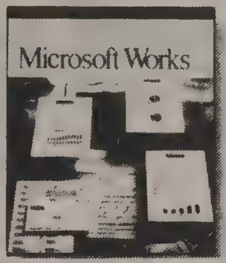

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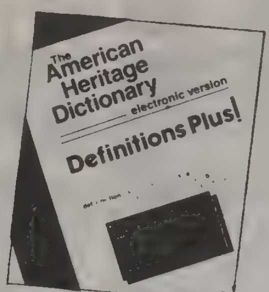

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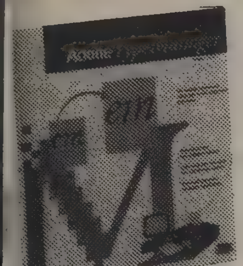

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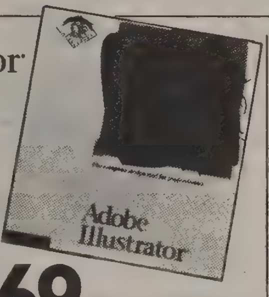

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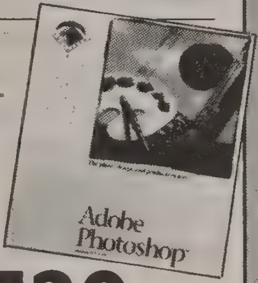

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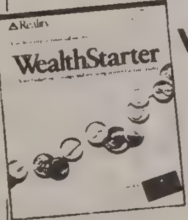

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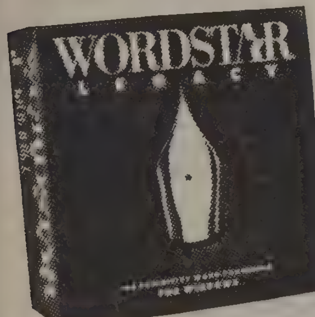

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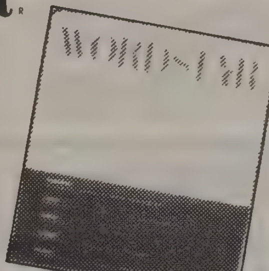

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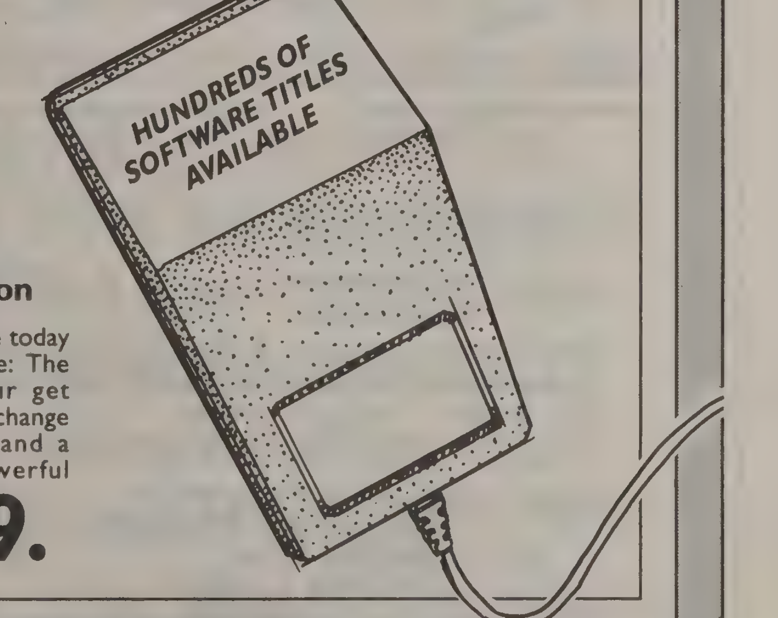
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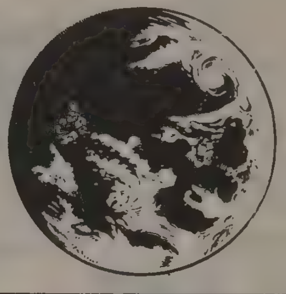

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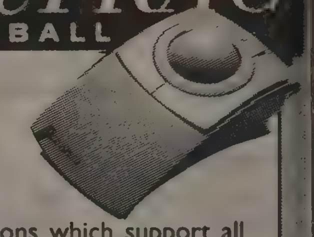

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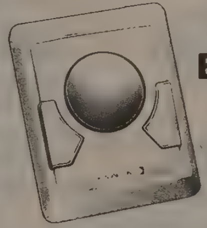

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Database Ethics

Does Computer-Based Marketing Go Too Far?

BY PAUL HOFFMAN

The strongly negative reaction to Lotus's distribution of its MarketPlace databases shows that many people are very unhappy with the state of privacy in this country. People know that their names are in hundreds of databases because they get so many junk mail solicitations every day. They want to do something about it, but they think that nothing will have any effect.

To a large extent, they are correct. The proliferation of powerful small computers has given many small businesses and service groups the ability and desire to use mailing and phone lists in their solicitations regardless of the privacy issues or the desires of the public.

DATABASE PROLIFERATION

Up to about ten years ago, in the days before inexpensive computers, mailing lists were bought, sold, and traded by companies with mainframes and huge disk drives. In those days, "huge" meant 100MB or more. Small companies did not have access to these databases directly; they would usually buy preprinted mailing labels from the database vendors based on particular criteria that they chose. As PCs became popular in the '80s, many people started keeping larger and larger databases within their companies, and the mailing label houses had to come up with strategies to compete with in-house mailing lists.

A second factor that contributed to more companies using in-house mailing lists was the proliferation of word processors that could handle "mail merge." By 1985, all word processors had to have the ability to read from databases and create semi-personalized letters to be acceptable to most companies. Although the different packages varied considerably as to how they handled these tasks, most people came to think of the task of making form letters as a standard feature of word processors, even if few used that feature very often.

This mentality reduced what might have been a normal aversion to sending out form letters, namely that everyone hates form letters and can usually see right through the "personal" greetings.

Another important factor in the growth of mailing lists was the general loss of privacy experienced in the 1980s. Literally hundreds of laws were passed that gave police, the IRS, and other government agencies easier access to information that was considered private only a decade ago, and almost no laws were passed to increase personal privacy. It is important to note that many of these laws reduced personal privacy for everyone, not just people suspected of being criminals. Court rulings supported these laws, and everyone got used to worrying that the government might come and want to know about things like their personal business dealings or their relationship with their neighbors.

ISSUES

Of course, mailing lists by themselves are not evil or harmful to personal privacy. It is only when they are used in an abusive manner that they become odious. But who gets to decide where to draw the line between an aggressive use of a mailing list and an intrusive one? Since there are very few legal definitions, and since people have become inured to loss of privacy, companies that use mailing lists have become bolder in their application of the data they contain.

When you get a piece of junk mail, all you usually see is your name and address. You might assume that everyone in your neighborhood or in the country got a similar letter, but this is rarely the case. In some computer somewhere, your name and address are also associated with other data that tells the sender a great deal about you. For example, many databases also include an estimate of your family income. Richer people get more junk mail for expensive items than poor people do.

How do they get that estimate? It depends on the mailing list vendor, but there are many methods. As a gross first cut, you might be assigned the average income for everyone in your 5-digit or 9-digit ZIP code. If the list came from a credit agency, your record might have the latest household income you reported on a credit application. If it came from your mortgage holder, it may be an estimate based on the size of the house you own. If it comes from your bank, it might be an estimate based on your banking activity. And so on.

Of course, the information could be wrong. Sloppy estimates can lead to a wide

> **Who gets to decide where to draw the line between an aggressive use of a mailing list and an intrusive one? Since there are very few legal definitions, and since people have become inured to loss of privacy, companies that use mailing lists have become bolder in their application of the data they contain.**

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range of results. In the case of junk mail, this doesn't affect you too much: you just get mail that it is even more likely you are not interested in. However, it also means that paper has been wasted, and gas was wasted in carrying that paper to the mill, then to the post office, then to your door. Since an appreciable amount of the waste in our ever-growing landfills is composed of junk mail, every piece of mis-directed mail is helping make our lives just a little uglier.

Beyond the immediate impact on the environment and the pocketbook of the junk mail sender, databases of personal information can certainly erode personal privacy. Junk mail is less intrusive than junk phone calls, and an environmentalist might suggest that the companies that waste all that paper consider using a paperless method of advertising. But can you imagine the effect of even one tenth of the money currently spent on junk mail being funneled to junk phone calls? Remember, these people know a great deal about you and would have no problem using that information if they thought it would help sell their products.

- "Say, I know money has been a bit tight recently, so I'm sure you would be interested in this bill consolidation loan."
- "This restaurant is especially popular among single people like yourself."
- "The police say that your area is having a crime wave, and with that new car of yours, why, I'd guess that you were thinking about a new alarm system."

Sound far-fetched? Ten years ago, maybe. It was impossible to process data quickly enough and sell it to small enough businesses to make these scenarios imaginable. With the advent of the personal computer, large cheap hard disks, and easy-to-use database management systems, phone calls like these could become popular in the near future. The rapid increase in postage costs will also help shift advertising dollars from direct mail to telephone solicitations, making companies with computers that much more likely to use the data they have collected or bought to their advantage.

HOW MUCH IS TOO MUCH?

Most people would agree that a database that simply had names and mailing addresses in it would be pretty innocuous. That information is easily obtained and has almost no personal information in it. But this begs the question of how much additional information, and of what kind, should be allowed. Remember, just because big Company A has the information, there is nothing to stop it from selling it to small Company B now that Company B can handle the information easily.

Consider that the second-largest user of mailing lists are nonprofit organizations. Do you really want to prevent the American Heart Association from being able to target its appeals at people more able to give? On the other hand, do you want it to have the power to target them so well that it might be able to tell that you are a wealthy person with a high probability of a heart attack? What about political nonprofits you support? What about the political nonprofits you despise?

After answering all those questions, if you want to change the laws and somehow limit what can and cannot be kept in databases, how will you do it? Ask the politicians, of course! They'd be more than willing to put restrictions on databases, with the possible exceptions of the databases they use to get themselves elected. And maybe the databases that belong to the law firms they're associated with. Or the databases that belong to the manufacturers in their districts. Or of the political action campaigns that support them. And so on.

Does this mean that we can't get the genie back into the bottle? Probably. When it was just the biggest companies with huge expensive computers, the idea of mailing lists seemed a bit remote to most of us and not so scary. As more and more companies were able to handle mailing lists better, people got more familiar with them and saw how they could help small companies and small nonprofits as well as the large ones. This made it easier to be fairly comfortable as they used more and more personal data.

WHOSE INFORMATION IS IT ANYWAY?

However you feel about the amount of information people have about you in databases all over the country, take a look in the mirror and ask what information you have in your databases. Almost every business that has a PC has a customer list on the PC's hard disk. The information in that customer list is no different from the information that other companies keep about you. Are you using the data in the customer list in the same fashion you would want people to use data about you?

For example, assume that someone in an unrelated business wants to buy your mailing list for a one-shot advertisement. Would you sell it to them? What if it were a large company? What if it were Exxon? How much would you sell it for? What kind of assurances would you require of them?

Literally hundreds of laws were passed in the 1980s that gave police, the IRS, and other government agencies easier access to information considered private only a decade ago, while almost no laws were passed to increase personal privacy.

We all know the trick of using a different middle initial in our names to see which lists people get our addresses from. How do you think your customers would feel if they found out that you sold their names to someone else? Would it affect your sales in a negative fashion? If so, what would you do the next time someone wanted to buy your mailing list?

Last month's *MicroTimes* highlighted the need for security, even on PCs. Is there information in your mailing list that should be encrypted so that people cannot access it without your permission? If not, are you willing to take the consequences if someone breaks into your office and steals the data? Would you want someone who had a similar database that had your name and personal information in it to do more than you are doing?

Handling data, even mundane mailing list data, is like the rest of life. What goes around comes around. You can't expect to have anyone treat you with more respect than you give them. Just because your PC has allowed you to keep better track of your customers, your responsibility isn't over. ■

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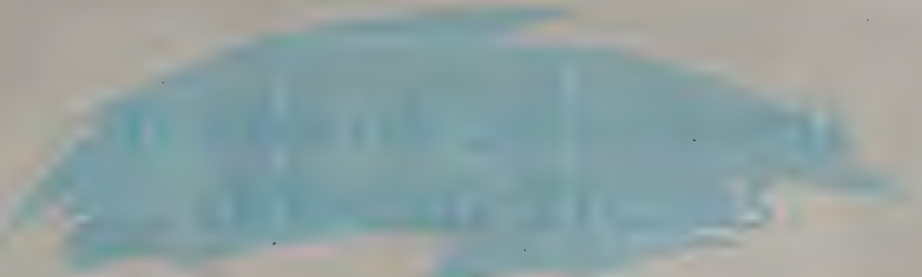

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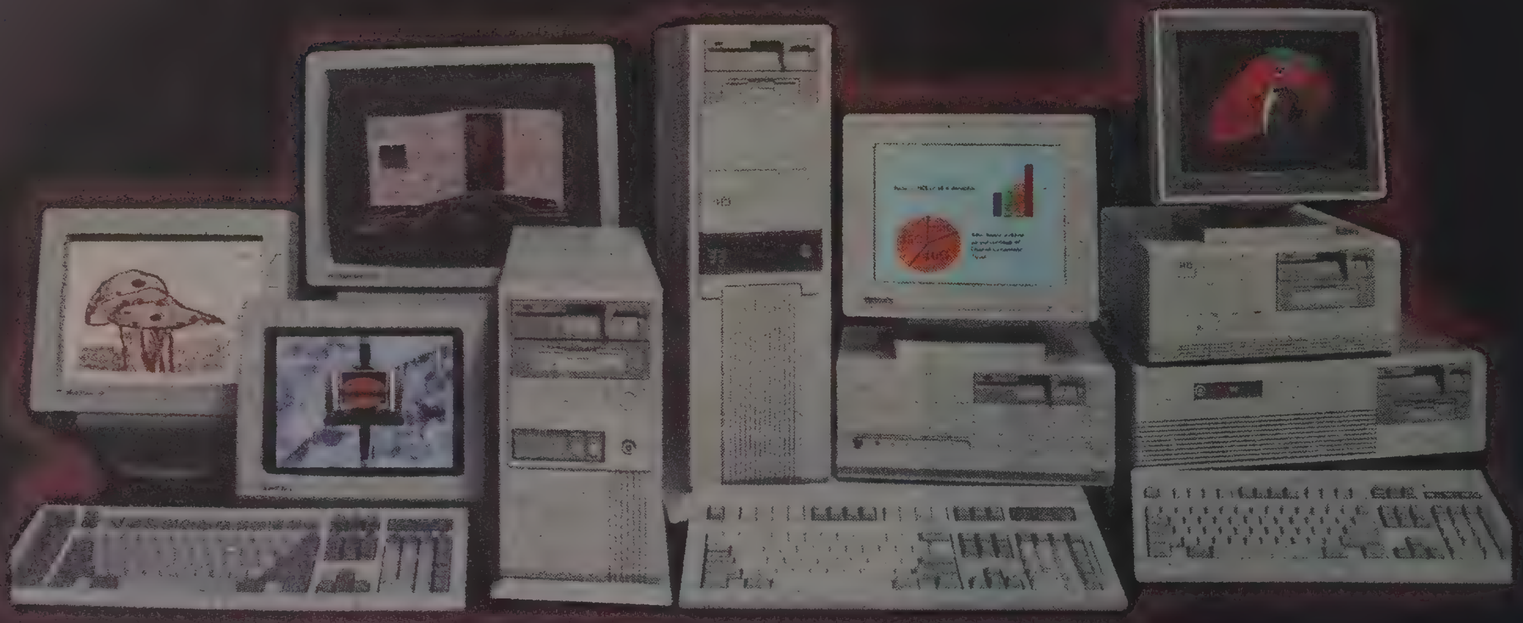

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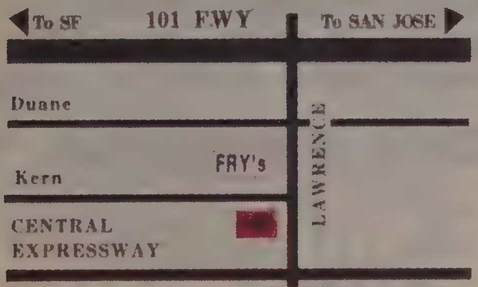

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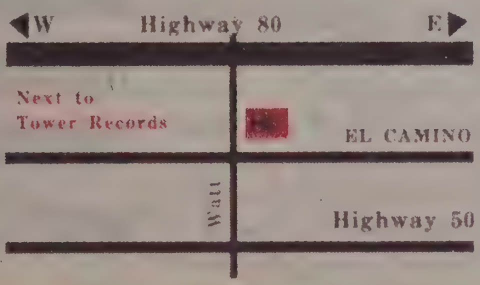

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Worldwide Networking For Social Change

The Institute For Global Communications

BY BROCK N. MEEKS

If you've ever wanted to effect a change, there's a niche with your name on it somewhere within the Institute for Global Communications. IGC Networks, including PeaceNet, cast their virtual "nets" into the ether and cover an astounding array of subjects. Within the electronic borders of IGC there are no "stars"; this is a global network of local heroes and heroines, strung together with the silicon equivalent of duct tape, chewing gum and bailing wire. And it works—for an amazing variety of projects and causes.

•You can participate in the environmental, political and social transformation handbook of the '90s, *Macrocosm USA*, being developed online in "macrocosm." Chapters include social issues and remedies, directories, bibliographies and other resources concerning today's planetary crises.

•Wondering "What's Left" of the role of the Left Movement in the '90s? See the topic of the same name in "udc.media." Related discussions are taking place in the "whatsnext" conference.

•EcoTerrorism or Nonviolence? What do you think? Redwood Summer and other Earth First! actions are listed and discussed in "ef!.general." Nonviolent forms of disobedience are discussed in the new conference "nonviolent.action." Related items include "Nonviolence and Property Destruction" in "ed.general" and "Navy Nuclear Weapons-Columbia River" in "gp.press."

•Democracy's Political Prisoners—See "Letter from Chile's PP" in the conference "reg.samerica."

The electronic landscape here is vast. Hundreds of conferences wrap into thousands of topics and tens of thousands of messages and responses. Even the "dead" conferences are worthwhile; rummaging through a dormant conference is like wandering through Tiffany's and being allowed to stuff a stray diamond, here and there, in your pockets.

ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS

At the heart of IGC Networks is APC, the Association for Progressive Communications. "Back in 1987 IGC helped to develop an international cooperative effort that would link like-minded groups via the computer," says IGC director Geoff Sears. "At the time, the only additional member we had was GreenNet based out of London." Short pause. "But we've come a ways since then." He smiles and his eyes light up.

"PeaceNet's been around since '86," Sears says. "IGC was formed shortly thereafter, so in a sense you have the situation where the child spawned the parent."

Since those humble beginnings, APC has added the Web (Canada), EarthNet (Australia), Alternex (Brazil), FredsNaetet (PeaceNet Sweden), and Nicarao (Nicaragua). Each of these networks share conferences and email with each other. "You can converse with people in more than ninety countries," says Sears. Soon Moscow and Germany will be added to APC's ever-widening group of networks.

With the comparatively new technology of computer-based communications, the gathering and processing of news and information is accelerated. Speed obviously goes hand in hand with volume. If you can transmit information more quickly, you can use the same resources to transmit more information.

The "global village" brought about by geo-synchronous satellite TV is still just a one-way street, regardless of speed. But groups like APC create the "global conference," which draws decision makers together across time and space in conversations that pierce the isolation in which policies have traditionally been formed and implemented in the past.

THE WAR AND MORE ON PEACENET

Formally, IGC is a nonprofit organization that acts as an umbrella for a mixture of networks: PeaceNet, EcoNet, HomeoNet and ConflictNet. PeaceNet, as you might imagine, houses the peace-activist-oriented conferences and read-only information resources.

One of the hottest topics on PeaceNet at press time is the Gulf War. The system is virtually blazing with message traffic about the conflict, with no less than six conferences addressing various war-related issues.

The quality of information is nothing less than stellar—reports stream in from bulletin boards and correspondents in Saudi Arabia, Britain and from others monitoring the world press. Information seen on PeaceNet in the morning often turns up in the headlines tomorrow, and sometimes the information beats the print media by days. For example, take this excerpt from the Mideast.Forum conference dated January 3, 1991:

"During the 1980s, Saudi Arabia spent nearly $50 billion on an air

Several organizations are also acting as community email agencies, providing electronic communication services to small local groups and permitting interaction with their counterparts around the world.

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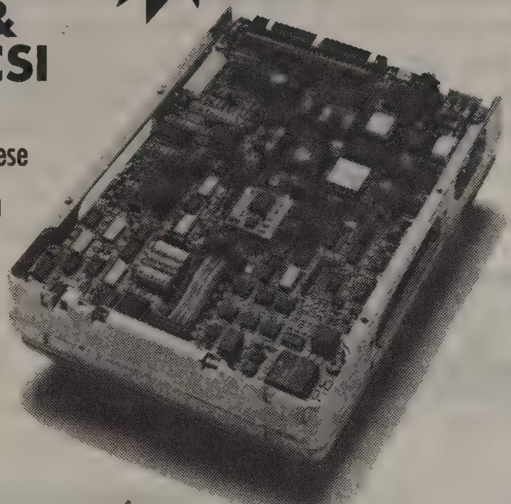

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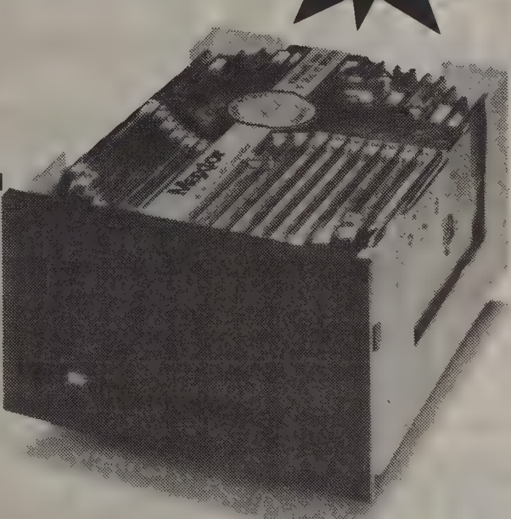

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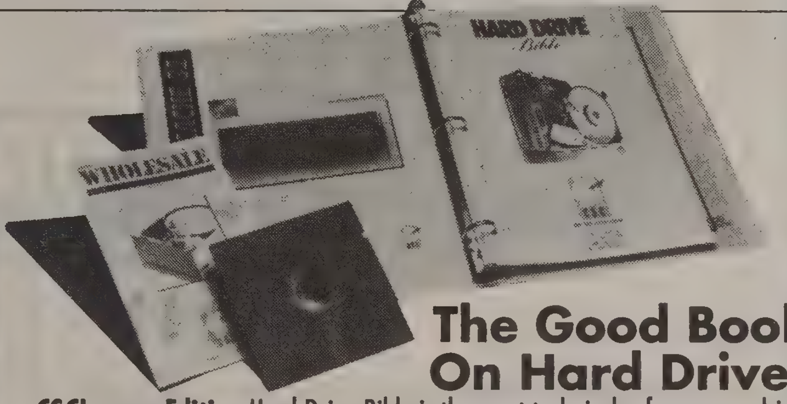

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defense system built to US and NATO specifications. At the same time, the US spent $14 billion building a network of (uninhabited) military bases across Saudi Arabia. At this time, the US was allied with (and arming) Iraq. What were the bases for? Isn't it a serendipitous coincidence that they just happened to be there to support the most massive bombing campaign in world history? Source: 'From Rapid Deployment to Massive Deployment' by Joe Stork and Martha Wenger in Middle East Report #168 (MERIP, DC)."

This snippet of information was widely played on by the Op-Ed pages just a few days later. Other facts, played widely on the nightly news, are given a decidedly "un-CNN" spin.

PeaceNet also boasts Amnesty International and the Christic Institute. The latter uses the network for electronic distribution of their newsletter and to keep people informed of the institute's activities.

Journalists and activists find PeaceNet a valuable tool and resource. When speaking before a Christic Institute conference, Tony Avirgon, a well-known investigative reporter, said that information he pulls from IGC is vital to his work. "[PeaceNet's] information base is a fantastic source of information, up-to-date, hour-by-hour, on peace, social justice and environmental issues."

OTHER NETWORKS

EcoNet concerns itself with environmental issues. From backyard recycling to rain forests, there are groups on EcoNet fighting the good fight.

The "global village" brought about by geosynchronous satellite TV is still just a one-way street. But groups like APC create the "global conference," which draws decision makers together across time and space.

Here you'll find groups like Global Action Network (GAN). GAN is based in Idaho and specializes in helping people take an active role in their environment. Extracting from research papers, government documents, and publications written by environmental experts, GAN supplies users with precise information that can be downloaded and acted on the same day.

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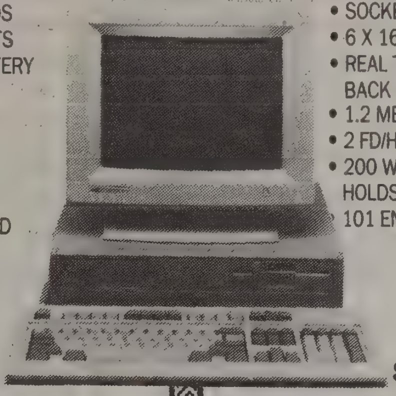

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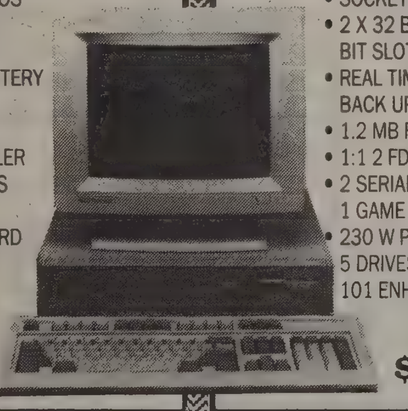

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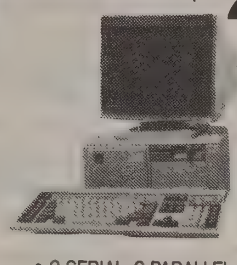

25 MHz
LANDMARK = 33

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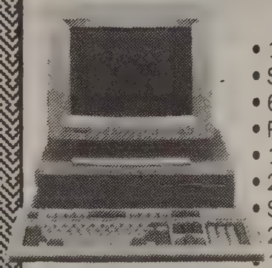

16 MHz
LANDMARK = 21

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- SOCKET 80387 & AMI BIOS
- 6 X 16 BIT, 2 X 8 BIT SLOTS
- REAL TIME CLOCK W/BATTERY BACK UP
- 1.2 MB FLOPPY DRIVE
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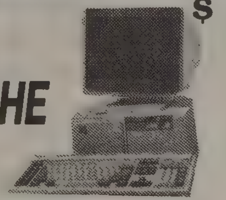

25 MHz 128K CACHE
LANDMARK = 115

- 1 MB RAM EXPANDABLE TO 8 MB
- AMI BIOS
- 2 X 32 BIT, 5 X 16, 1 X 8 BIT SLOTS
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- 1.2 MB FLOPPY DRIVE
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486

33 MHz 128K CACHE
LANDMARK = 150

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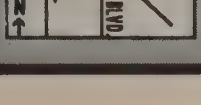

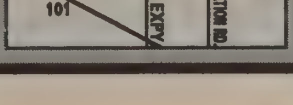

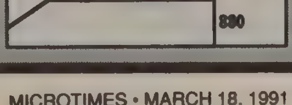

For example, *The Action Guide: A Guide for Citizen Group Action*, a kind of do-it-yourself eco-version of "how to fight city hall," is online in full text. There's also the address and phone numbers of environmentally oriented US government agencies, as well as key House and Senate committees and subcommittees.

The conference *Greenstore* is moderated by internationally recognized consumer advocate Debera Lynn Dadd, author of *Nontoxic, Natural & Earthwise*. Greenstore puts you in touch with an abundance of information about ecologically sensitive projects.

EcoNet was honored last year by Renew America's "Searching for Success" as the most extensive environmental computer network in the world.

ConflictNet, according to IGC's newsletter, "is dedicated to providing nonviolent and collaborative problem-solving by bringing people in the conflict resolution movement together with peace and environmental activists." Here you'll find the Academy of Family Mediators, who use ConflictNet as a resource for planning and information. Others use it for drafting legislation, breaking research on "assessment tools" for organizational conflict, and issuing calls for papers. Journals and newsletters such as the *Conflict Resolution Notes* are online.

HomeoNet focuses on the practice of homeopathic medicine. It's a small but growing network. The network links homeopath practitioners in the US with those in the UK, Australia, and, soon, Brazil.

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CASE STUDY: ALTERNEX IN BRAZIL

Yes, the rain forests in Brazil are in peril, but there's more to Brazil's problems than rain forests. For example, homeless children are dealt with harshly: vigilante groups simply kill them rather than house them.

Outrage? Sure. Unnoticed? Hardly. A group known as IBASE (the Portuguese acronym for Brazilian Institute of Social and Economic Analysis) focuses on socio-economic analysis and deals with just this sort of problem, and it's one of the first groups to use Alternex. Their success has encouraged other non-governmental organizations (NGOs) to follow suit. "Results breed results," says Sears.

Until IGC hooked up with IBASE, the NGO was struggling to make efficient use of data communications, "but the weight of paying the 'data freight' internationally was killing them," says Sears. Enter Alternex.

The collaboration between IBASE and IGC resulted in Alternex, a multi-host PC-based "store and forward" system linked to IGC's international computer network. In July 1989, only a few months after approval of the project, Alternex was fully operating 24 hours a day. Today, more than 130 individual and group users in Brazil and elsewhere participate in the network, and this number is increasing daily. Users pay a monthly fee, the equivalent of about US$7.50, which includes one hour of online connection. Online connection runs approximately $5 per hour, cheaper than nearly all other electronic mail services.

Some of the results:

•Local environmental organizations tap into IBASE's computerized directory of environmental development donors and the projects they finance when looking for resources.

•Groups active in the Foreign Debt Campaign, which mobilizes support for alternative solutions to Brazil's debt crisis, use electronic mail to coordinate joint activities.

•NGOs use the system to communicate easily with donor agencies throughout the world or as the cheapest and most appropri-

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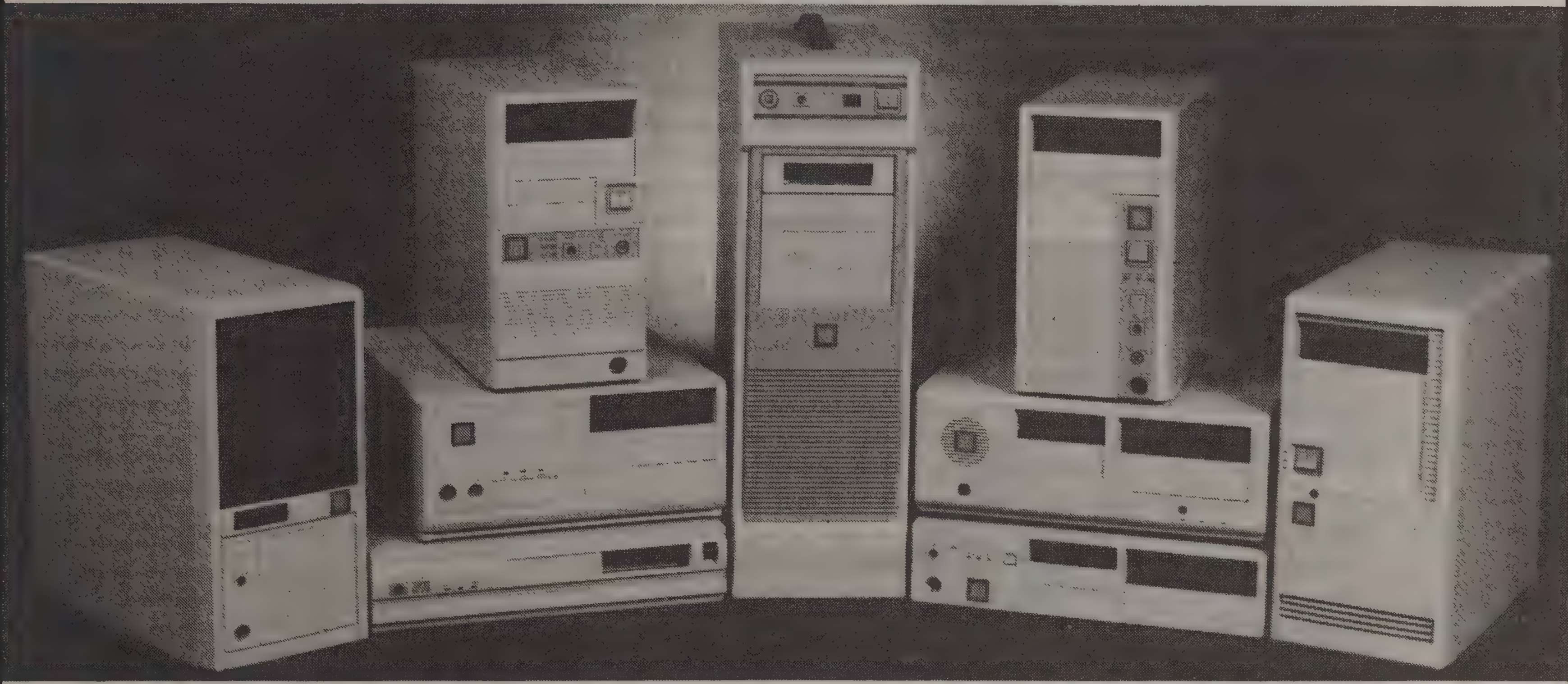

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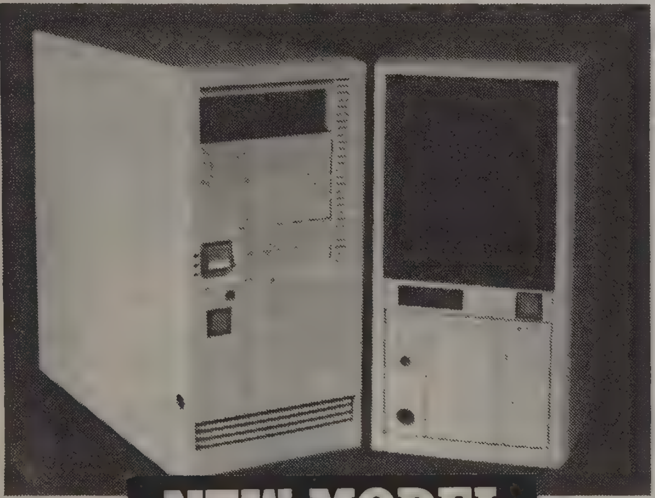

NEW MODEL

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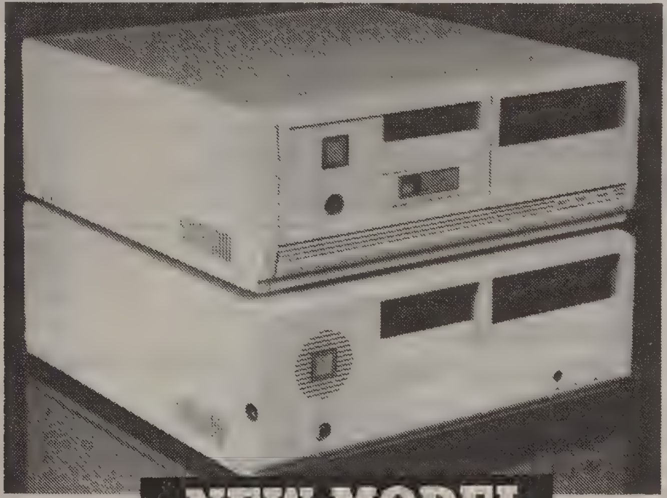

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ate channel to distribute their news clippings or press releases.

•Several NGOs are also acting as community email agencies, providing electronic communication services to small local groups and permitting interaction with their counterparts around the world.

SO, WHAT'S THE CATCH?

Is all this too good to be true?

Well, there are problems. The entire system is "an experiment" according to Sears. He acknowledges that the technology is out of the reach of most. Computers are still expensive. "Is that really a problem, or just an obstacle to hurdle?" asks Sears. He's maneuvering the conversation. But he's right on target.

"You have to think of IGC as being close to the top of an 'information chain,'" explains Sears. "These [networks] aren't accessible to the poor people, they are supporting mid-level NGOs, who are empowered by the computers to do their job better: help people. The networks are an augmentation to these groups, not some kind of miracle drug. Bottom line, people still have to do the work, but now they have better information, they get it faster and can share it internationally."

Since IGC is funded by foundations and private individuals, I ask Sears why, if I had $100 grand to donate, I should give it to him and not to the local homeless shelter. "You have to weigh how much of a multiplier the PC is," he says. "Our theory is that linking all these different micros together is going to have an increased effect of allowing these groups to get more information out to more people. The whole operation is elitist, to a certain extent. Computers aren't reaching the peasant farmer on his plot of land."

Does the peasant farmer need a computer? "You tell me," Sears says. "We don't know what the farmer needs; but the local NGO does, and that's who we're helping. We try hard to stay out of the way. There's been enough of the 'We're American, we know what's best for you' mentality."

PEACE: THE NEXT GENERATION

When the last pixel's phosphor fades from green to black, we're going to leave this all to the children, to the next generation of activists. Is IGC reaching the kids? Read this letter from those waiting in the wings:

Dear PeaceNet,

We are a group of 5th and 6th grader gifted students who attend a magnet school in Miami, Fla. We are (through class discussion and projects) learning about how to become peacemakers. In our gifted center we have already learned a lot about becoming peacemakers, such as being aware of what is going on in the world, and being open minded; however, we would like more information. Could you please send us some information on becoming peacemakers. Thank you.

Sincerely,

Future Peacemakers of America

There's a letter in the mail. (IGC, 3228 Sacramento St., San Francisco, CA 94110, 415/923-0900. Fax: 415-923-1665) ■

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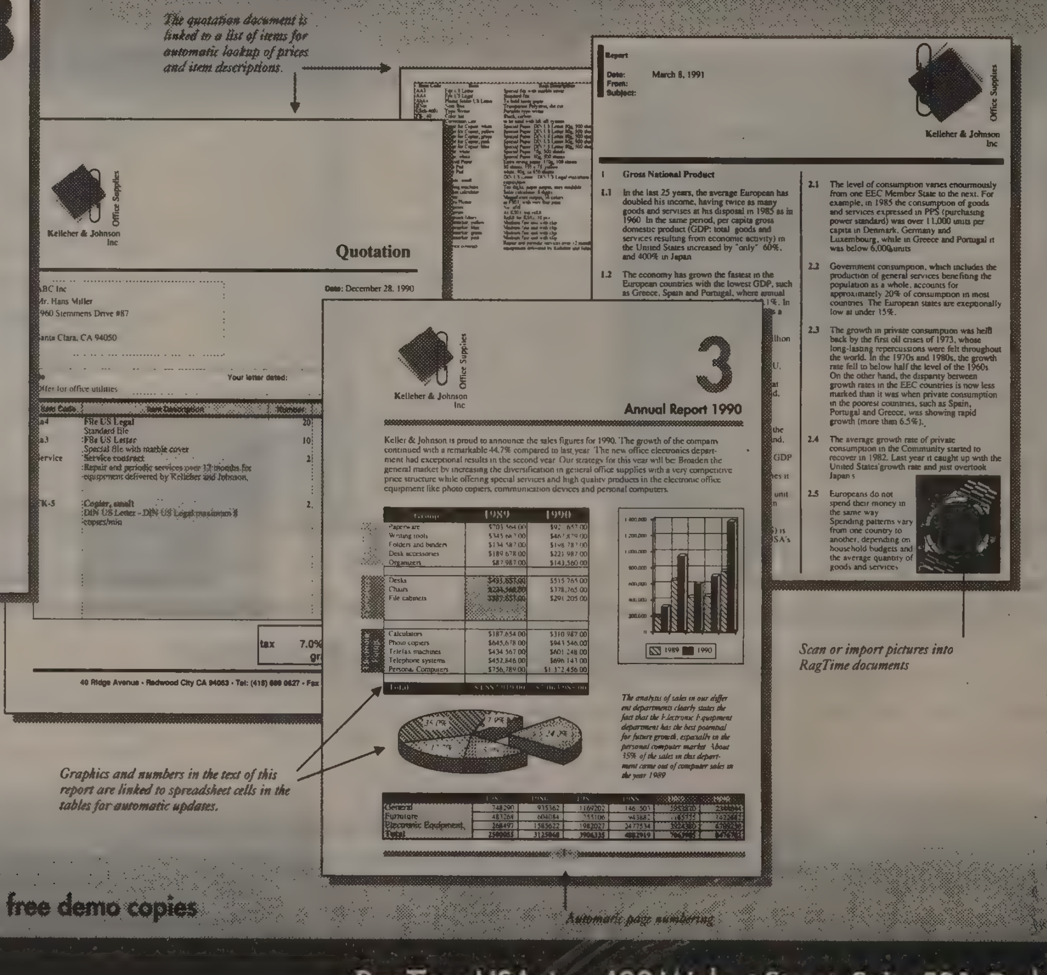

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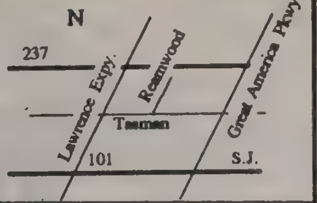

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Real-Life Adventure

Upgrading To A 386

BY BIRRELL WALSH

Some months ago I decided that my venerable 286 was no longer adequate, and that I needed to get a 386 system. Surely, I thought, "It is but the work of a morning."

I have now upgraded to a 386, but the experience was more harrowing than I expected. I write about the frustrations and puzzlements that accompanied the upgrade, so that others may know they're not alone when they find themselves overwhelmed halfway through the move to a better technology.

DEFINING THE DREAM SYSTEM

As a writer about computers, I hear one question more often than any other: "What should I get?"

When people ask me what they should get, I always recommend that they dream before they calculate. Some of the things which are only dreams now—say, high speed, or graphics capability—should be just as important as the things they know they need already (such as word-processing capability). At the very least, a purchaser should be sure to buy a system that can be expanded in the future.

When I thought about my desires, I ruminated as follows:

"My interest in the foreseeable future is textual and logic-processing rather than graphic work, with the possibility of speech synthesis down the road. My dream is to obtain a lot of speed and a lot of memory, so I can do complex database and text processing. I know that applications are beginning to appear which demand more than 640K. I also know that some applications are too slow on a 286 at 10MHz, but will run satisfactorily on a 386 at 33MHz. I need a fast chip, ideally with a cache aboard that will reduce the time it spends accessing its memory. That will allow me the flexibility to move in various directions in the future. Also, I do not want a 386SX, because the SX chips have narrow data buses, only half the size of those of the non-SX 386.

"The DOS world (unlike the Mac world) is based on upgrading by parts. I can upgrade video displays, hard disks, and other elements later. So I have no real need for a new case, a new power supply, or new hard and floppy disks.

"What I really want is a new motherboard with a very fast processor, and a fair amount of memory, at a price I can afford. In concrete terms, that means a 386 33MHz with an on-board cache and, say, 4Mb of memory.

"My dream is of future speech synthesis. Will my system be compatible? Yes, because any future speech synthesizer will probably appear as an add-in board. I will be able to use it in my system. So I have room to grow in the direction of my dream."

I had a target system.

SHOPPING

When shopping for computer systems, take shark repellent and as much knowledge as you can acquire. There are honorable people in the business, many of them. There are also some others.

For instance I called one computer emporium and asked how much for a 33MHz 386 motherboard with chip. I was quoted a price of less than $800. The price was so good that I said I would be right there. After an hour's drive down from San Francisco, I arrived and discovered the board sitting in a showcase, labeled at this price with chip. But when I tried to buy it, the salesman and later the manager simply refused to sell it. "It was a mistake," they said, "We shouldn't have labeled it at that price." I was totally fried, but there was nothing to do about it except to walk out and brush the dust of that place from my feet.

On the other hand, there were many who offered excellent prices and a variety of services. Since I wanted to keep much of the shell of the system, I called vendors and asked about prices for upgrades rather than for package systems.

I did not wish simply to buy a motherboard and install it myself, but a friend highly recommended a middle ground. Domino Computer, he said, would sell you the components and supervise your work while you installed them yourself. He was enthusiastic about the results. He had not only gotten a computer at a low price; he had acquired an education at the same time—an education for which he would have had to pay many dollars at a technical school.

Despite his enthusiasm, my innate laziness and lack of time encouraged me to find a dealer who would sell me the parts and do the work for me. That meant hours on the phone, comparison shopping with an exact list of the things I wanted. But the phone bill and the time were amply repaid when I found MicroAge. I had expected to find the best price in some Cupertino garage. I was surprised that their business address was on Sansome Street in San Francisco.

If you have someone else build your system, for heaven's sake take along everything you want to use with it, and ask them to check it out. Pay them cheerfully. Trust me on this one.

Continued on page 182

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- 2 Serial, 1 Parallel Port
- 1:1 Interleave HD/FD Controller
- 1.2 or 1.44 MB Floppy Drive
- 80387-SX Socket
- Tower or desktop case w/230W power supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix

44 MB 28MS Hard Disk	$195
68 MB 24MS Hard Disk (NEC or Toshiba)	310
89 MB 18MS	$345
100 MB 18MS	$420
200 MB 16MS	$745
330 MB 16MS	CALL
670 MB	CALL

Modem

2400 Baud (Int)	$65
2400 Baud (Ext)	99
Fax Modem (4800 FAX, 2400 modem)	125
Fax Modem (9600 FAX, 2400 modem)	175
Everex 1200 Baud	55
Everex 2400 Baud	115
Everex Fax Modem (9600 Fax, 2400 Modem, MNP5)	255

Keyboard

Mitsumi 84 Key	$35
Mitsumi 101 Key	39
Keytronic 101 Key	45
Maxiswitch 101 Key	45

Monitor

Hyundai Mono	$70
14″ Flat Screen	95
Hyundai EGA	275
Hyundai VGA 640x480 .39	265
Hyundai VGA	295
NEC Multisync 2A	445
NEC Multisync 3D	595
Super VGA (1024x768) 0.28	325
Seiko 1440	499
Seiko 1450	629
Sony 1304	649

Printer

Star NX-1000 II	145
Star NX-1000 Color	195
Star NX 2410	249
Panasonic KX-P 1180	145
Panasonic KX-P 1124	265
Panasonic KX-P 1624	375
Panasonic 1524	375
Panasonic KX–P 4420 Laser	849

Misc.

287-8/10	$135/135
387-16/20	315/335
387-25/33	425/510
165W (XT) Power Supply	35
230W Power Supply	48
Logi Hi-Res Mouse	69
Logi Trackman Serial/Bus	85/90
DFI Mouse (3 Button, Micro Soft Compatible)	45
AT Jr. Case (XT)	32
AT Deluxe Case	48
Mini Vertical Case w/Power Supply	95
Vertical Case w/Power Supply	160
Colorado 120 MB Tape Back-Up	265
DFI Memo 2000	85
Everex RAM 3000 Deluxe	89
RAM DIP/SIPP/SIMM	CALL

Floppy Drive

Teac 360K/1.2M	62/69
Teac/Toshiba 3.5″ 720K	65
Teac/Toshiba 3.5″ 1.44 MB	69

Interface Card

Mono Graphic Card	$20
Color Graphic Card	35
Floppy Controller 360/720/1.2/1.44 XT/AT	33
VGA Card (16 bit 800x600)	65
Paradise VGA+ 16 (1024x768 OEM)	85
Trident VGA w/1 MB RAM	125
Orchid Pro Designer II w/1 MB	235
ATI Wonder (1024x768)	179
AT M I/O (2S, 1P, 1G)	29
WA3 FD/HD Controller	65
1:1 FDC/HDC (MFM)	65
DTC 7280 1:1 FDC/HDC	85
DTC 7287 1:1 FDC/HDC (RLL)	95
DTC 6280 ESDI	135

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- ■ Prices Shown Are Cash Prices
- ■ Company P.O.'s Welcome
- ■ UPS Shipping Daily

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are now on display!

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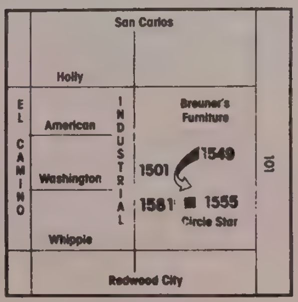

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- ▼ The Impact of Standards
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- ▼ Downsizing and the Micro-Computer Revolution

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Emerging Database Technologies for the '90s

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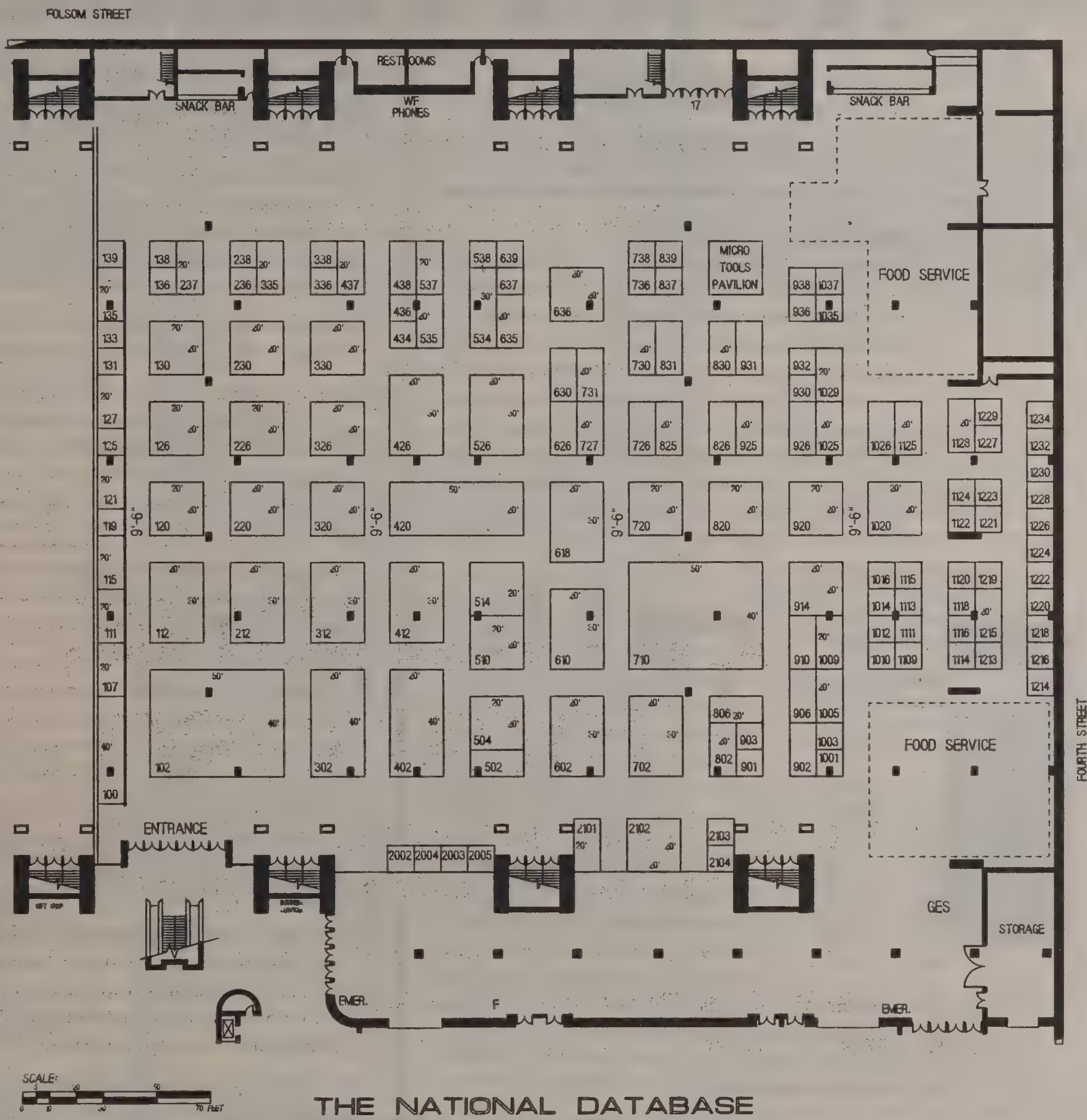
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BOOTH SIZE: 10'X10'.
EXCEPTIONS NOTED ON PLAN.
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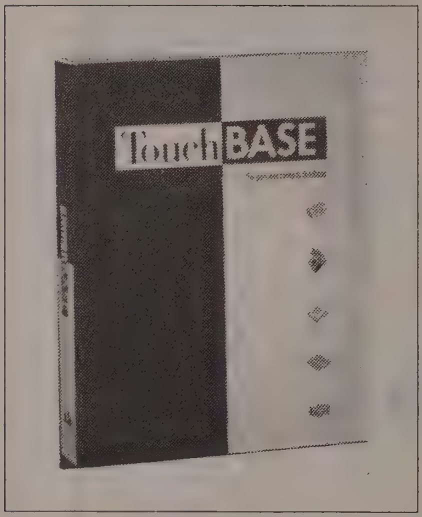
Uncle Ralph's PRESENTS PRODUCT SPOTLIGHT

New Products

MACINTOSH SOFTWARE

PATTERNS OF THOUGHT

ThoughtPattern addresses both free-form text retrieval/file management and highly structured, traditional databases. It is the only Macintosh application to handle all the diverse information contained in text files, graphics, spreadsheets, and other databases, and allows the user to launch other applications directly from ThoughtPattern. Users can assign thousands of reference tabs to each item for ease of retrieval, and set alarms as reminders to call up certain items for meetings or "to do" lists. ($199.95) Bananafish Software, Inc., 730 Central Ave., San Francisco, CA 94117. (415)929-8135, 1-800-522-5939.



TOUCHBASE

TouchBASE is a new Macintosh desk-accessory database for managing personal and business contacts. It provides multiuser access over a network, sorts and permanently resorts by any field, provides several user-definable fields, and formats words, telephone numbers, and zip codes automatically. TouchBASE will import and export data with standard and user definable delimiters, and let you print labels, envelopes, fax covers, address books, and reports. A demo version of TouchBASE is available on CompuServe, America Online, and AppleLink as well as directly from After Hours Software. ($125) After Hours Software, Inc., 5636 Van Nuys Blvd., Suite B, Van Nuys, CA 91401. (818)780-2220.

4D WRITE ENTERS THE 4TH DIMENSION ENVIRONMENT

This full-featured word processor is integrated into 4th Dimension. It allows entire documents to be associated with a record in a database or stored as a standalone document. Integrating 4D Write into 4th Dimension gives the user quick and elegant mail-merge capabilities as well as document processing, database publishing, or document tracking, all without having to program one line of code. ($295) ACUIS, Inc., 10351 Bubb Rd., Cupertino, CA 95014. (408)252-4444.

continued

PRODUCT UPDATES

- ➤**Adobe** has announced **Adobe TypeAlign for Windows**, an inexpensive type manipulation program that allows users of Microsoft Windows 3.0 to create special text effects for easy placement into page layout and word processing programs. Adobe Systems, Inc., 1585 Charleston Rd., PO Box 7900, Mountain View, CA 94039-7900. 1-800-83-FONTS.
- ➤**Aldus** has released **PageMaker 4.0 for Microsoft Windows 3.0.** Aldus Corp., 411 First Ave. S., Seattle, WA 98104. (206)628-2361.
- ➤**Altima Systems** has lowered the suggested retail prices of the **Altima NSX** and **Altima Three/80** to $3,499 and $3,699 respectively. Altima is also bundling automatic data compression and offering a guaranteed upgrade to a 60MB hard disk drive for $499 with the NSX. Altima Systems, Inc., 1390 Willow Pass Rd., Suite 1050, Concord, CA 94520. (415)356-5600, 1-800-356-9990.
- ➤**Computer Associates International** has reduced the suggested retail price of **SuperCalc5** from $495 to $149. Computer Associates International, Inc., 711 Stewart Ave., Garden City, NY 11530-4787. (516)227-3300.
- ➤**Microrim** has announced the availability of **R:BASE 3.1 Runtime,** which allows R:BASE applications to be distributed easily and economically. Microrim, Inc., 3925 159th Ave. N.E., PO Box 97022, Redmond, WA 98073-9722. (206)885-2000.
- ➤**OPLINK/Compress 2.50** is now available from **SLR Systems.** Registered OPLINK/Compress users can upgrade to v2.50 directly from SLR Systems for $29.95. SLR Systems, Inc., 1622 N. Main St., Butler, PA 16001. (412)282-0864.
- ➤**TBBS (The Bread Board System) 2.2,** a comprehensive upgrade to the advanced communication system from **eSoft, Inc.,** will be released in June. TBBS 2.2 has been expanded to accommodate up to sixty-four users, who can be connected via a single PC using only DOS. eSoft, Inc., 15200 E. Girard Ave., Suite 2550, Aurora, CA 80014. (303)699-6565.
- ➤**Quicksoft**'s word processor, **PC-Write Lite 1.02,** is now available. The latest update includes support for Cyrillic and offers new features for character set customization. Quicksoft, Inc., 219 First Ave. N. #224, Seattle, CA 98109. (206)282-0452.
- ➤**Reference Software International** has announced the release of **Grammatik IV 2.0.** New features include expanded network support, access to the user spelling dictionaries created in Microsoft Word and WordPerfect, and support for all popular mouse devices. Reference Software International, Inc., 330 Townsend St., Suite 123, San Francisco, CA 94107. (415)541-0509.
- ➤**Systems Enhancement Assoc.** announced that all unregistered users of ARC, a data compression program that was formerly shareware, can

continued

POWERFUL

UNCLE RALPH'S/OMNITEL 386-33

"This is a fine machine from a store that is setting the standard for retail support and service . . . Given the quality of the components, I consider the prices excellent"
Bernie Zilbergeld, Computer Currents

33 MHZ WITH CACHE, 100MB HARD DRIVE, 4MB RAM, SUPER VGA COLOR MONITOR, 2 FLOPPY DRIVES, TAPE BACK-UP

$3,195
COMPLETE SYSTEM

ViewPerfect

WHAT IS INCLUDED...

VIEWSONIC 1024X768 VGA COLOR MONITOR
This is one of the best monitors available today. Made by Matsushita (the same folks who own Panasonic, JVC, and Technics). It boast an impressive .28 dot pitch, and it looks excellent whether it's on or off.

1024 X 768 VGA CARD
The Viewsonic VGA card comes with 1 MB RAM for Maximum resolution and choice of colors. Better still, it is non-interlacing to maintain upgradeability.

TAPE BACK-UP
Colorado Memory Systems 100MB tape back-up system makes protecting your valuable data easy

2 TEAC FLOPPY DRIVES
3.5" 1.44 MB and 5.25" 1.2MB floppy's provide maximum convenience and compatibility.

2 SERIAL PORTS, PARALLEL PORT, & GAME PORT
4 ports connected through only one bus slot to maximize system expandability and connectivity.

100MB HARD DRIVE
Very fast and so quiet that you'll have to put your ear to the computer to hear it.

YOUR CHOICE OF EXCELLENT KEYBOARDS
Whether you like a "click" keyboard or a "silent" one, function keys on top, or on the side, a large enter key, or a small one, we'll have a keyboard you love, and we'll leave the choice to you.

ONE HOUR REPAIR SERVICE: If you have a problem with one of our computers we can usually have it fixed within 1 hour. It's important to us that our customers remain satisfied.

90-DAY INTEREST-FREE FINANCING: You can defer payment for 90 days and pay no interest at all!

SATISFACTION GUARANTEED

Designed around OnmiTel's outstanding 33MZ motherboard, and complemented with the best components available, this "State of the Art" computer is sure to satisfy the most demanding users. You must be completely satisfied with the speed, software compatibility, integrity of design, workmanship, and overall good looks of this system or we will be delighted to take it back.

We've been putting smiles on faces for 9 years. We know what it takes to do a good job...and we do it everyday!

WHY WE USE THE OMNITEL\USA MOTHERBOARD...

This may be the finest motherboard ever designed, and it is the heart of this great system:

- **4MB RAM UPGRADEABLE TO 32 MB:**
  Many systems come standard with only one megabyte of RAM, but this system comes standard with four, and while many systems require you to buy a memory expansion card, this one will take 32 MB right on the motherboard.
- **64K STATIC RAM CACHE:**
  To maximized speed and elminate "wait states". Omnitel uses 15ns SRAM vs. 25ns or none at all on most other boards.
- **PHOENIX BIOS:**
  For more extensive run time diagnostics, faster boot-up, and greater compatibility with a wide range of hard drives.
- **LIFETIME BIOS UPGRADES:**
  OmniTel will upgrade your bios to the current version for as long as you own your system, and they won't charge you a nickel.
- **32 MB RAM CAPACITY:**
  There's no need to buy expensive memory expansion cards. All of the memory goes right on the system board.
- **80387 AND WEITEK SUPPORT**
- **8 LAYER MOTHERBOARD:**
  Many 386 computers are made with a 6 layer wet film motherboard and fine line traces. OmniTel's more expensive construction technique uses an 8 layer dry film design and thick 12 mil traces. The result is a more reliable product that is designed to stand up to the strain of years and years of heating and cooling.

Complete System Includes MS-DOS

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Uncle Ralph's

Uncle Ralph's SATISFACTION

"Uncle Ralph's support and service is the best I've seen from any retail store and probably at least the equal of any in the business, retail or mail-order." Bernie Zilbergeld, Computer Currents

7 GREAT REASONS TO SHOP AT Uncle Ralph's

1. Everything's quality-tested by fanatics
We pre-screen everything we sell for compatibility & reliability because we hate problems even more than you do!

2. Low price guarantee
We'll match any local authorized dealer's price! We'll even protect you against lower advertised prices for 30 days after you buy. We deliver on our promise of low prices!

3. Money back if not delighted
10 day refund & 30 day exchange
If your new purchase isn't exactly what you need you can bring it back for a refund, or trade it in for a television, a stereo, or a fax machine! This is Uncle Ralph's, and we must have something you want!

DTK 286 COMPUTER

Includes Monitor

Complete With 40 MB Hard Drive & Monitor

From one of the world's largest computer makers, this IBM compatible comes complete with serial and parallel ports, 1.2MB floppy drive, 1MB RAM, 40MB hard drive, and hi-res flat screen monitor. Includes DOS, 1 year warranty, and Uncle Ralph's outstanding commitment to customer satisfaction.

COMPLETE SYSTEM $899 $45/Month

UR/MYLEX 386-SX

VGA Monitor Included

42 MB Hard Drive, 2 Floppy Drives, 2 MB RAM & VGA Color Monitor

One of the best made computers on the market. It's has a dependable & fast motherboard, comes with a great keyboard, and a superbly crafted "accu-fit" case. Complete system includes parallel and serial ports, 2 MB RAM, 1.2MB floppy drive, fast 42 MB hard drive, VGA color monitor, and Uncle Ralph'sexcellent support and service.

$1,699 $80/Month **Complete System Includes MS-DOS**

UR/OMNITEL 386-SX20

VGA Monitor Included

2 MB RAM, 80 MB Hard Drive, 64K Static RAM Cache, & VGA Color Monitor

A truly superb computer with tremendous speed (28 Landmark) and outstanding new features. Complete with game, parallel, and 2 serial ports. This outstanding computer is housed in a small footprint case, and offers your choice of excellent keyboards.

$1,999 $100 Month

Complete Systems Includes MS-DOS

UR/MYLEX 25 MHZ 386

100 MB HD, 4MB RAM, 64K Static RAM Cache, 2 Floppy Drives, VGA Color Monitor

Here's a lot of computer for a very sharp price. Based on the excellent Mylex 8 layer motherboard with 64K static RAM cache. The system includes a 100MB hard drive, 2 TEAC floppy drives, enough RAM for high speed compiling and multi-tasking, your choice of excellent keyboards, parallel and 2 serial ports, and VGA monitor.

$2,495 $125 Month

PRINTERS FOR EVERY JOB

PANASONIC'S OUTSTANDING NEAR LETTER QUALITY PRINTER

Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 cps in the draft mode. Incudes automatic tractor feed with paper parking and self loading.

Panasonic Office Automation
2 Year Warranty!
Call for Best Price

HIGH SPEED 24 PIN STAR PRINTER DEFINES NEW STANDARD OF QUALITY

This terrific printer is not only quiet and easy to use, but it's very fast (250 cps) and has the best looking output of any printer in its class.

$299 star

BROTHER'S TOP OF THE LINE, HI-SPEED LETTER QUALITY PRINTER

Our fastest dot matrix printer produces text and graphics that are good enough for desk top publishers. It's very fast (370 cps) easy to use, & perfect for high output users.

$349 $17/Month
brother
COLOR UPGRADE AVAILABLE $75

PANASONIC WIDE CARRIAGE 24-PIN PRINTER

LETTER QUALITY!

Here's a great buy on an outstanding wide carriage printer. It's easy to use, has excellent "letter quality" print, and an automatic self-loading tractor feed with paper parking. 2 Year Warranty!

Panasonic Office Automation
Call for Best Price

LAPTOP COMPUTERS

PANASONIC'S WONDERFUL NOTEBOOK COMPUTER

This tiny laptop is barely bigger than a notebook, but it's fast, fun, and has a new easy to read backlit screen. Includes 640k/RAM, AC adaptor and battery charger, and DOS.

Panasonic Office Automation
Call for Best Price

BONDWELL 286 NOTEBOOK WITH 40 MB HARD DRIVE

Light and Powerful

Here's a terrific buy! It weighs only 7 pounds, has a backlit screen, and 40 MB hard drive, and comes complete with an "extra' battery and external charger.

$1299 $65 Month

COMMAX 286 NOTEBOOK WITH VGA SCREEN

Commax's tiny new computer comes complete with 20MB hard drive and a bright and sharp VGA screen. It's about the same size of a small notebook, but has all the power of the most popular desktop computers. $1899

386-SX with 30 MB HARD DRIVE $2699

TANDON 386SX LAPTOP COMPUTER

This is a really neat computer. Runs on AC or 3 hour batteries, has a terrific new VGA screen that refreshes itself in half the normal time. Includes 40MB hard drive and MS-DOS.

$2,199 $110/Month **Introductory Special!**

EXCELL 386-SX LAPTOP w/120 MB HARD DRIVE

Lightweight, comfortable, easy to use and carry

120 Mb Hard Drive Removable keyboard & VGA screen. Includes 2 serial ports, 1 parallel, and the latest version of DOS.

$2699 $135 Month

with 40 Mb Hard Drive $2399

MANAGER SPECIALS

Info Mouse .... As Low As	$19
3 Year Warranty Game Software .... As Low As	$29
Xenix Mouse with Windows	$119
Info Scanner	$129
MiniScribe Hard Drive	$179

FAX MACHINES

PANASONIC FAX With Answering Machine

Panasonic

$449 $22 Month

SHARP FAX WITH PAPER-CUTTER, AND 12 PAGE MEMORY

This unit is quick (13 sec), has a 12 page memory, papercutter, halftones, a phone/fax switch.

Works With Your Answering Machine

$799

GUARANTEED! Uncle Ralph's

4. One hour repair service
If you have a problem with one of our computers we can usually have it fixed within 1 hour. It's important to us that our customers remain satisfied.

5. 90-day interest-free financing
You can defer payment for 90 days and pay no interest at all! Or you can charge it to your Uncle Ralph's credit card account.. Sometimes we even take cash! Subject to lender approval.

6. Open 7 days a week
We're open for you 7 days a week— til 8 pm Monday through Friday, and til 6 pm on weekends.

7. We'll keep you satisfied!
We've been putting smiles on faces for 9 years. We know what it takes to do a good job...and we do it everyday!

TDK DISKETTES

TDK 3.5" 720K	$7.99*
TDK 3.5" 1.44	$16.95*
TDK 5.25" 1.2MB	$9.95*

*Boxes of 10, Lifetime Guarantee

Head Cleaner	$5.95
Backup Tape Cleaner	$29.95

Call for On-Site Service & Consultation

UR/Omnitel 33 MHz 386

Static RAM Cache, 100MB Hard Drive, 4MB RAM, 2 Floppy Dirves, 1024x768 VGA Color Monitor & Tape Backup

VGA Monitor Included

The OmniTel motherboard is making some big waves lately and we've packaged it with other excellent components to create a high performance system. Complete system includes hard drive, Viewperfect monitor, 512K VGA card, 100 MB tape backup, parallel, game, 2 serial ports, your choice of excellent keyboards. & DOS.

"This is a fine machine from a store that is setting the standard for retail support and service ...Given the quality of the components, I consider the prices excellent."
Bernie Zilbergeld
Computer Currents

$3,195
$160 Month

Complete System Includes MS-DOS

"Super Find"
S.F. Focus Magazine

UR/Mylex 486-33 EISA

THE FASTEST 486 COMPUTER ON THE MARKET

The EISA bus makes this CPU superior for use as a Unix or Novell file server, or as a high powered CAD workstation. With Mylex's (optional) caching controller card and an SCSI hard drive it can achieve disk access times of 0.2 MS. With Mylex's EISA (optional) Ethernet Card it can double the speed of most networks. Base System includes 4 MB RAM, 2 floppy drives, serial and parallel ports, and keyboard. Video and Hard Drive separate.

"If I wanted to replace my entire system for optimum all around performance, I would build it from Mylex EISA based boards"
Michael N. George
Personal Workstation

Double Your Network Speed!

$4,258
$212 Month

LASER PRINTERS and ACCESSORIES

EVEREX 6 PAGE/MINUTE DESKTOP LASER PRINTER

Super-Fast, Very Sharp and Very Clean

Quiet, small-footprint desktop printer with 24 resident fonts and 132 HP-compatible Bitstream softfonts. 300 dpi, 512K memory, expandable to 4.5MB. HP emulation and 2 cartridge slots.

EVEREX **$869** **$43 Month**

BROTHER'S TOP RATED LASER PRINTER

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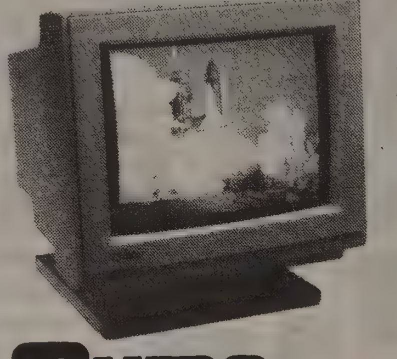

QM 830 VGA MONITOR
- ♦ 640x480 Resolution
- ♦ 14″ w/Swivel Base

16-BIT VGA CARD
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- ♦ 14″ w/Swivel Base

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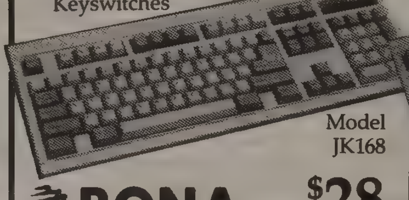

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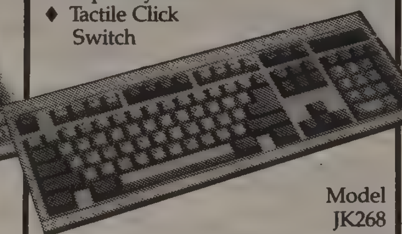

Model JK268

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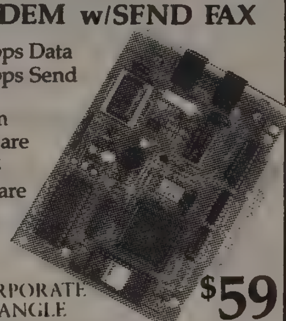

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- ♦ Dr. Halo Software/ Manual
- ♦ Mouse Pocket
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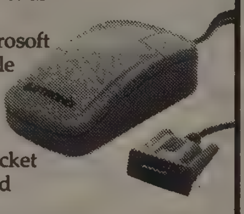

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105 MB IDE, 17ms	448
210 MB IDE, 15ms	800
1.2 MB 5¼″	60
1.44 MB 3½″	62

MONITORS

14″ Amber Mono	$85
14″ Qume 830 VGA	245
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1 MB, Super VGA	115

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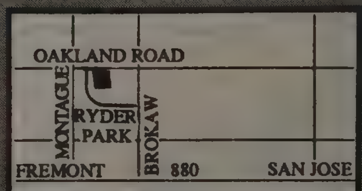

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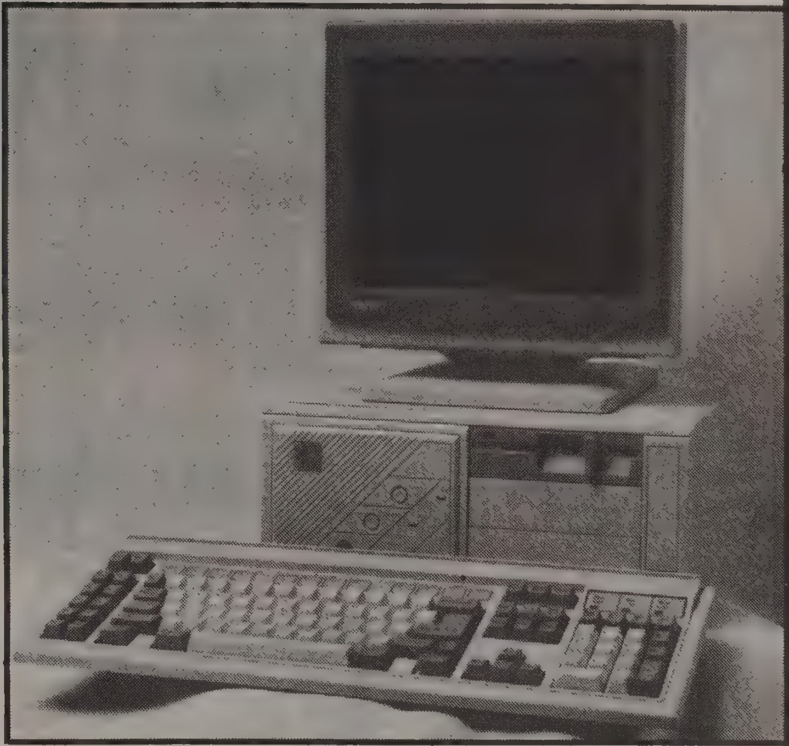

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PRICE	$345	$625	$775	$740	$1050	$1965
Micro Processor:	Intel 80286/12	Intel 80386SX/16	Intel 80386/20	Intel 80386/20	Intel 80386/25C	Intel 80486/25C
Cache:	N/A	N/A	N/A	32K	64K	256K
Memory:	1 MB	1 MB	1 MB	1 MB	1 MB	1 MB
Socket For Co-Processor:	80287	80387SX	80387 Weitek 3167	80387SX	80380 or Weitek 3167	Weitek 4167
Controller:	IDE	IDE	IDE	IDE	IDE	IDE
Floppy Drive:	1.2 MB	1.2 MB	1.2 MB	1.2 MB	1.2 MB	1.2 MB
I/O:	2 Serial 1 Parallel	2 Serial 1 Parallel	2 Serial 1 Parallel	2 Serial 1 Parallel	2 Serial 1 Parallel	2 Serial 1 Parallel
Expansion Slots:	6-16 Bit 2-8 Bit	6-16 Bit 2-8 Bit	5-16 Bit 1-8 Bit 1-32 Bit	6-16 Bit 2-8 Bit	5-16 Bit 1-8 Bit 1-32 Bit	6-16 Bit 2-8 Bit
Keyboard:	101 Enhanced	101 Enhanced	101 Enhanced	101 Enhanced	101 Enhanced	101 Enhanced
Landmark:	15.9	21.7	26.1	28.9	40.5	117
SI:	15.3	18	23	23.4	31.6	45.9
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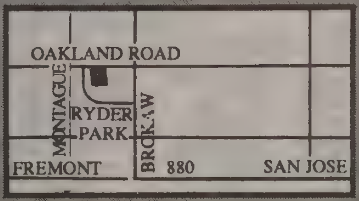
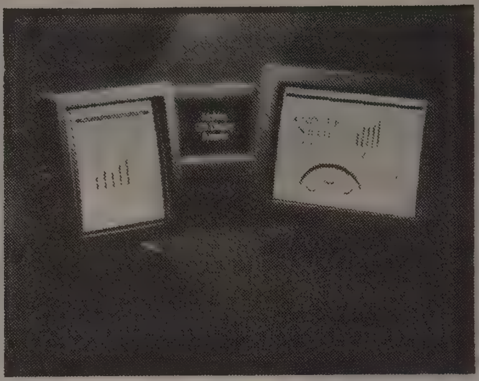


MACINTOSH HARDWARE



MOBIUS DISPLAYS ITS NEW SYSTEMS

The Mobius 030 Display System transforms the Macintosh SE into a business workstation. It is built around an internal card that has both a 25MHz Motorola '030 processor and an on-board video controller. The basic system includes the accelerator card and Mobius's One Page monochrome monitor. The Two Page display is also available. The accelerator board can work with Apple's Portrait Display and the full line of Mobius monitors. Additional options include a Motorola 68882 floating-point coprocessor and a virtual memory option for employing a page memory management unit. (Suggested retail price: $1,395, accelerator with One Page Display; $1,595 with Two Page Display) Mobius Technologies, Inc., 5835 Doyle St., Emeryville, CA 94608. 1-800-669-0556.

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UTILITIES 1-2-3 (121)-Very useful Lotus utilities with macros, templates, hints and more.
E-2 FORM EXEC (529)-Menu driven form generator & filler powerful features!
LEGAL FORMS (134,135)-Over 100 legal forms that can be easily customized to your needs. (2 disk set)
MAIL MONSTER (136)-Powerful mail list manager. Sort, edit and print labels easily.
TIME & MONEY (145)-Menu driven record system for budgets, interest, etc.
EASY PROJECT V.1.2 (143)-Complete project management system w/automatic scheduling, calculations, charts & more. Dbase compatible.
PC-BOOKS (108)-Easy to learn General Ledger program.
CMATE-GL (101)-Full featured General Ledger.
PAINLESS ACCOUNTING (366,367,368)-Menu driven accounting system w/billing. One of the best (3 disk set).
SOAR V.1.92 (492,493)-Service oriented accounts receivable w/billing. (2 disk set).

HOME

FAMILY TREE (521)-Explore your family roots, descendants, family groups & more. Fully menu driven.
BIBLE Q (410)-Test your knowledge of the Bible. Great for studies.
RH-MAN V.3.3 (178)-Desktop utility, notepad, etc. Sidekick clone. Very Good!
CITY DESK V.7.1. (177)-Full featured desktop publishing system. Very Good!
PC-CHECK (253)-CheckBook & savings account record keeper.
VCR DATABASE (265)-Database for your VCR tapes & movies.
FINANCE (259)-Financial wizard. Calculates loans, amortizations, etc. 20 different calculations.
RECIPES V.1.0 (441)-Over 100 recipes to make you the hit of the party.
LOTT-O-LUCK (531)-Be the next big winner in 6/53. Includes database of winning numbers. You never know what will happen!!!
EXPRESS CHECK (520)-Easy to use checkbook program. Prints checks too!!
REAL ESTATE ANALYST (255)-Menu driven program for mortgages, interest, amortizations, analysis between renting or owning, plus more.
PC-RECIPE (462)-Computerize your recipe box. Program will recalculate ingredients.
CROSSWORD CREATOR V.3.30 (442)-Create crossword puzzles for fun or learning. Great for Crossword fanatics.
SUPERMUSIC JUKEBOX (285)-70 plus songs to turn your PC into a Jukebox.

GAMES

YAHTZEE & PHRASE CRAZE (370)-2 great classics games.
LAS VEGAS (501)-Vegas games of skill.
PACMAN GAMES (432)-Disk filled with great versions of this classic.
STRIKER (212)-Pilot a helicopter and survive. . .Fast paced.
SUPER TREK V.1.0 (213)-One of the best versions!!
TAPPER (216)-Keep the beer flowin'. Also 2 other games.
SKILL (433)-Disk filled with games of skill.
BLACKJACK STRATEGY (201)-Not just a game. Learn Vegas strategy.
CASTAWAYS & S. AMERICA (196)-2 great adventures games.
CENTER FIELDER (197)-Pinball games played on a Baseball Field.
LAWN MOWER (209)-Mow 6.5 acres in 10 secs. without killing a gopher.
SCRABBLE (207)-An old favorite on computer.
UNO (215)-Excellent computer version.
ARCADE FUN #1 (434)-Disk jammed with arcade games. Requires CGA.
ALDO'S ADVENTURE (378)-Action arcade games of hazards, treasures, ramps, leadders. Requires EGA or VGA.
BURGER BLASTER (459)-Fast paced game. Try to build a perfect burger.
EGA-TREK (437)-One of the very best versions!!! Requires EGA.

EDUCATION

PLAY 'N LEARN (428)-6 wonderful programs for young children ages 18 months to 4.
ABC GAME (430)-6 games for your tots to play & learn by.
FRENCH 1 (425)-Learn beginning French. Menu driven.
ALGEBRAX (439)-Excellent Algebra 1 tutorial.
PC-TOUCH (186)-Learn and practice typing.
FUNNELS & BUCKETS (183)-Great learning game for kids!!
ANIMALS (182)-Math for kids.
IQ BUILDER (184)-Test IQ or build one. Great for teaching.
EDUCATE (502)-Disk jammed w/programs to teach kids math, English, Vocab, etc. Requires Basic.
SPANISH (464)-Spanish tutorial w/quizzes, multiple choice, etc.
FRENCH 2 V.1.1 (426)-After the basics, move to the 2nd level of French.
MAP (189)-Learn about the U.S., geography & Capitols. Great Graphics. Requires Basic.
AMY'S FIRST PRIMER (181)-6 delightful programs to teach the alphabet, numbers, shapes, colors, counting, problem solving, & more. Ages 4-8. Requires Basic.

WORD PROCESSING

WORDPERFECT TOOLS V.3.0 (512)-For 5.0 only! Great tools for any user!
WPKIDS (348)-A Word Processor for kids!!!
WORDPERFECT 5.0 MACROS (450)-Disk filled with macros. A must!!
PC-STYLE & PC-READ (352)-Writing analysis program. Helps you write more professionally.
SPANISH/ENGLISH (453)-Program to translate any file from English to Spanish or vice versa.
WORDPERFECT 5.0 TUTORIAL (485,486)-WordPerfect tutorial learning system. Become an expert at WordPerfect!!
SLIC WORKS V.1.0-(525)-Powerful spreadsheet, database, word processor & communications program. FrameWork Clone.

UTILITIES

PD-SIDEWAYS (292)-Prints a file sideways on an Epson printer.
HP SOFT FONTS (298)-Laser fonts for HP LaserJet+.
AT UTILITIES (308)-Very useful utilities for your PC/AT.
BAKER'S DOZEN (311)-Buttonware's 12 best utilities.
AUTOMAXX V.2.2 (309)-Menu system & DOS Manager.
PC-FILE III V.4.0 (319)-Jim Button's file management system. Just about the best!!!
DIRECTORY SCANNER V.3.0 (314)-Xtree clone. DOS Shell.
PRO-MAN (326)-Very good hard disk management program.
EPSONSET (296)-Downloadable fonts for your Epson.
PRINTMASTER TO PRINTSHOP (237)-Convert PM to PS or vice versa.
LASERJET FONTS #2 (376)-Contains 10 point Roman & Helvetica fonts in bold & italic. Includes downloader program.

ADULT

ASTROTIT (110)-Adult arcade game!!
B-WARE (114)-Adult entertainment trivia, poker, etc.
NASTY (116)-That says it all!!!
X-RATED PRINTMASTER (118)-Let your imagination take the best of you.
1 On 2 (354)-XXX Rated. . . .Fantastic!!
X-RATED PRINTSHOP (500)-X-Rated pics for PrintShop.
EROTICA (526)-Sizzling, true to life animated show!!
FANTASY (527)-Text based Fantasy game. You supply the criteria and the program supplies the Fantasy.
INTERSEXION V.1.01 (373)-X-Rated monopoly game with 5 levels of PLAY!! Includes trivia, jokes & more.
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MAXINE (115)-Like none before!!! Sit back and watch!!

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#3 EDUCATION
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#4 GAMES
Center Fielder, Global Thermal Nuclear War, BlackJack Strategy, Striker, TurboBall, Aldo's Adventure, Pacman Games, Scrabble, Miniature Golf, Othello.

#5 HOME
Lott-O-Luck, Finance, PC-Recipe, Loans, Bartender, Aquarium & Instant Paradise, Crossword Creator, The Diet Disk, Supermusic Jukebox, Notepad.

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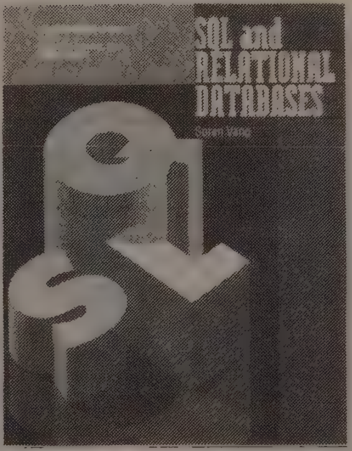
The author of *SQL and Relational Databases* chose to look at relational databases because of their widespread use and sound theoretical basis. The relational database's combination of power and flexibility has led to many applications in business, education, finance, government, industry, nonprofit institutions, science, and engineering. This book describes the procedures required to obtain and manipulate information from a database. The author assumes that readers are familiar with both computers and databases. The book is thus suitable for intermediate-level courses



PRODUCT UPDATES

register their copies of the software for $1 by May 1. LAN installations can register for $1 per workstation. The upgrade to ARC+Plus is $39.95 for registered users or $89.95 for unregistered users. Systems Enhancement Assoc., Inc., 925 Clifton Ave., Clifton, NJ 07013. Voice: (201)473-5153, Fax: (201)614-9605.

➤ZIM 4.0, from **Sterling Software**, is a fully open advanced 4GL/RDBMS application development environment that embraces emerging standards for the delivery of complex, multiuser applications. Sterling Software, Inc., 36 Antares Dr., Suite 500, Ottawa, Ontario, Canada K2E 7W5. (613)727-1397.

continued on page 122

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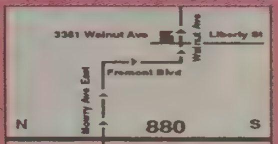

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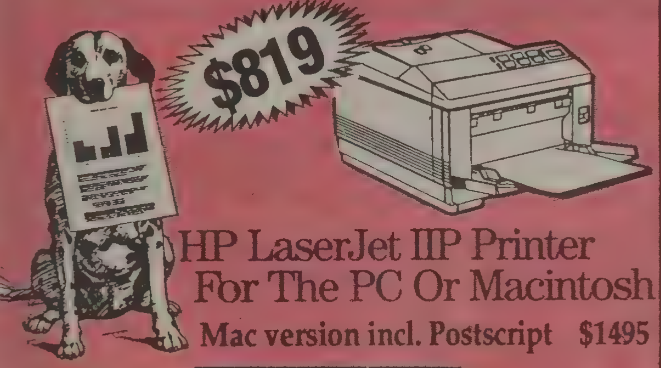

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HP LaserJet IIP Printer For The PC Or Macintosh

Mac version incl. Postscript $1495

PC WEEK POLL: LOW-END LASER PRINTERS

(Individual Attributes, with Scores of Importance of Each Attribute, on a Scale of 100)

	Overall Weighted Score	Base/Median Installed Base	Software Compatibility (94)	Overall Reliability (93)	Hardware Compatibility (92)	Overall Performance (91)	Frequency of Repairs (88)	Ease of Install/Remedy (86)	Value Relative To Cost (82)	Quality of Document (81)	Product Support Quality (81)	Product Support Access (78)	Cost per Copy of Consumables (76)
HP LaserJet IIP (Hewlett-Packard Co.)	84	12.0/3.0	86	90	92	88	88	84	82	81	80	79	73
IBM LaserPrinter E (IBM)	78	6.9/2.0	80	81	87	84	79	77	79	72	72	71	73

HP LaserJet III Printer

Come in for Demo.

- ▼ Unsurpassed laser print quality.
- ▼ More fonts plus scalable typefaces.

Mac interface Available.

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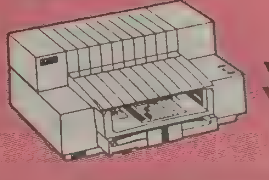

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- ▼ For Macintosh®. Fits on your desk.

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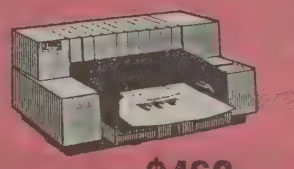

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- Spreadsheets at the push of a button
- Wide variety of built-in fonts
- 3-year warranty
- Quiet, desktop operation

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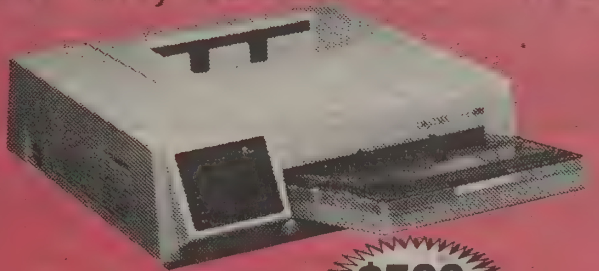
The Laserless Printhead: Warranteed For 5 Years.

The OL400 also comes with the longest warranty in the industry: 5 years on the printhead, plus 1 year parts and labor on the entire printer. To deliver a warranty that strong, our engineers had to re-invent the laser printer.



And the price: $599

To replace the conventional page-printer technology of laser beams, lenses and rotating mirrors, they designed a proprietary, solid-state LED printhead with no moving parts.

Its All In Our Head.

Besides being inherently reliable, the simpler design of the Okidata printhead also means a straight-line paper path that's less likely to jam—even when feeding envelopes, heavy stock, or labels. And, since we build it ourselves, the cost stays low.

The Okidata OK-A Badge Of Honor

The performance and features of the OL400 were good enough to earn it a PC Magazine Editors' Choice Award. But it also had to earn something else-the Okidata OK.

What's the Okidata OK? Simply our promise that every printer we make will deliver not merely acceptable performance, but outstanding performance - not just good value, but exceptional value.

OKI OK!

OKIDATA OK!

We don't design it to work. We design it to work wonders.

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SuperSport 286E		
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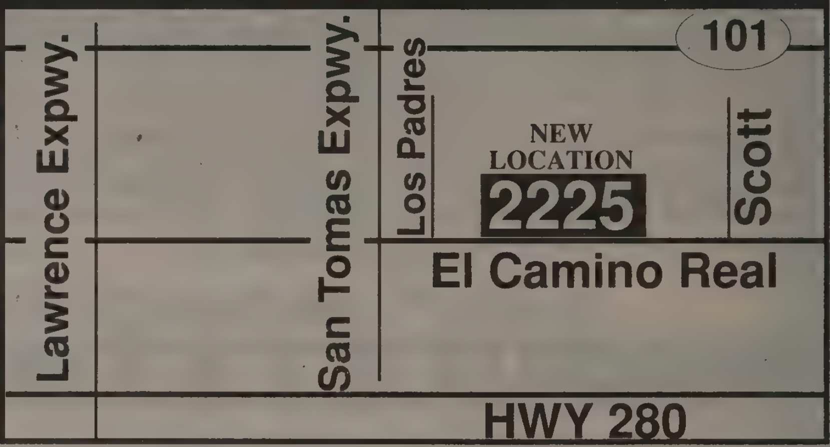

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8051A 42MB 28ms 3.5" IDE	$229
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LQ-950	110 columns	459
LQ-1050	136 columns!	599
LQ-2550	400cps133cpsLQ	899
DFX-5000	533cps	1199
DFX-8000	1066cps!	2199

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M1909	Wide Carriage	390
M1824L	270cps, 90cps LQ	409
M1924L	Wide Carriage	529

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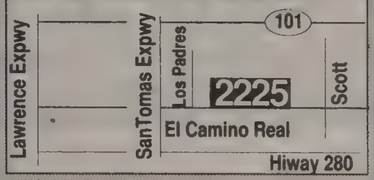

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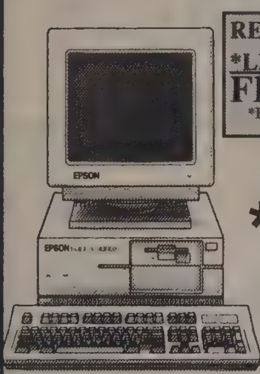

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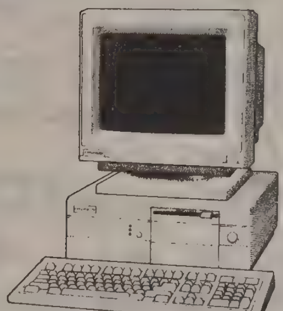

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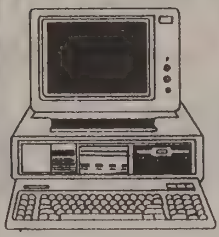

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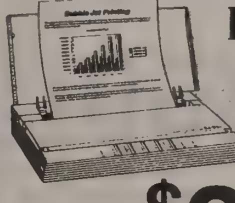

Weights *5* lbs.

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- 83 characters per second
- 360x360 dpi resolution
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386SX-16MHz
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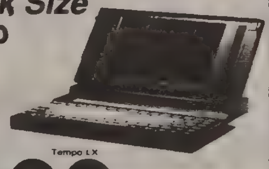
Notebook Size
Laptop



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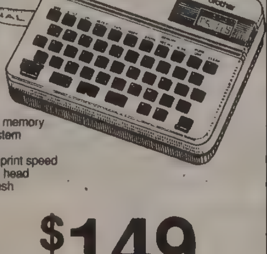

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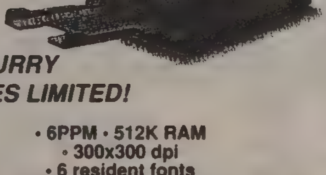

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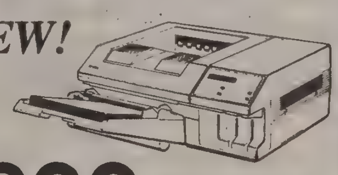

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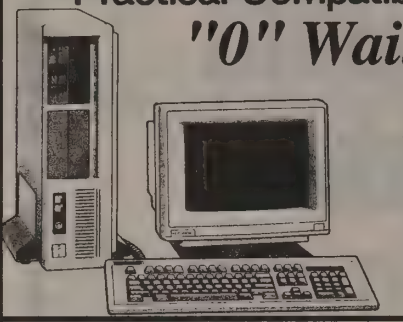

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• 1MB RAM memory • 80286CPU,10MHz • MS-DOS 3.2, GW-BASIC • 12Expansion Slots• 240 wattpower supply • 101 key keyboard• 1.2MB, 5.25" FDD • 18-month warranty

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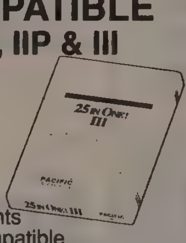

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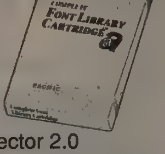

- 51 Typestyles
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- Fast & easy access to fonts
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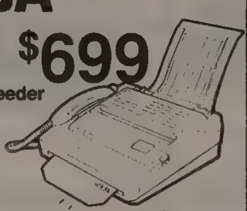

- 10 sheet automatic feeder
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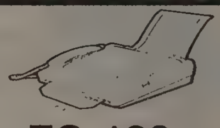

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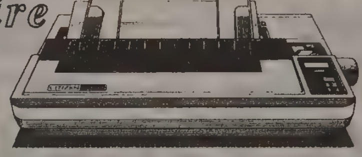

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• 24 wire printer • 192cps, 64cps LQ • 6 resident fonts • Command-Vue control panel • Bonus Utility software

GSX-140 COLOR OPTION $49 **$289**
200GX 169

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KX-P1695

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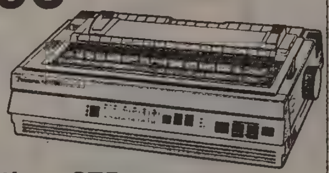

- High-speed printing, 375 cps
- Super letter quality, wide carriage
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KX-P1624 $349
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NEW! **FUJITSU**

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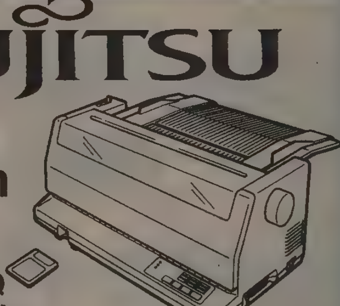

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120 MB
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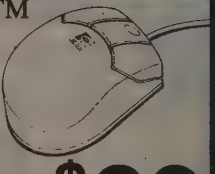
HIGH RESOLUTION
ERGONOMIC MOUSE

LOGITECH



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- 11 pages per minute
- 500 sheet paper capacity
- 26 internal fonts

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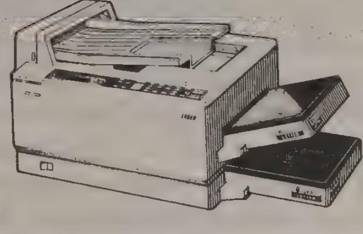

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An AFFORDABLE laser under $800!

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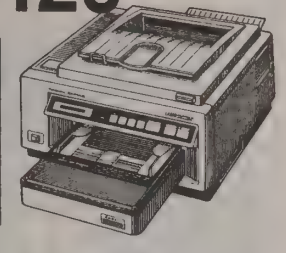

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- 250 sheet capacity
- 300 dpi resolution
- 512K RAM exp to 4.5MB

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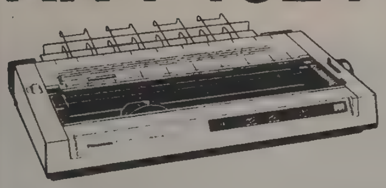

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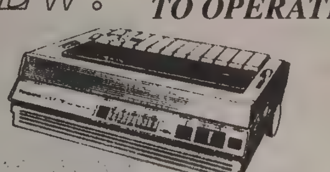

- 192cps; 63cps LQ
- 5 built-in LQ Fonts • 2 year warranty

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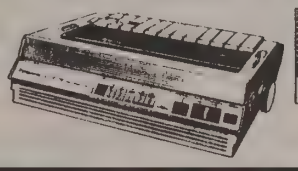
KX-P1124



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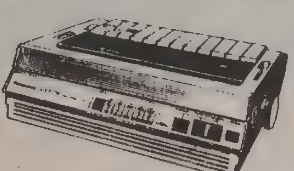

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- 240x216 dpi resolution • 80 column printer

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14" Multi-Freq. Color Monitor

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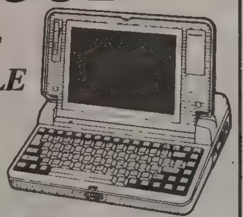

- 640K exp to 1.6MB • MS-DOS 3.3
- 720K, 3.5" FDD • Backlit supertwist LCD

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CF-170
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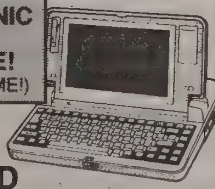

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- 8088 compatible • 640K exp to 1.6MB
- 1.44MB 3.5" FDD • Backlit supertwist LCD

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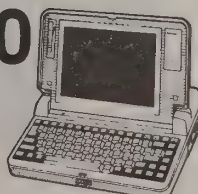
CF-270



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- MS-DOS 4.01, GW-BASIC • 7 lbs. w/battery

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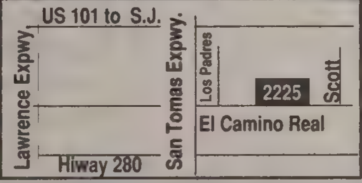

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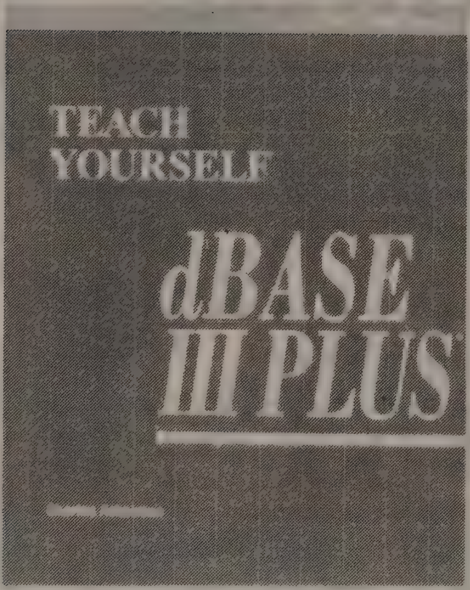
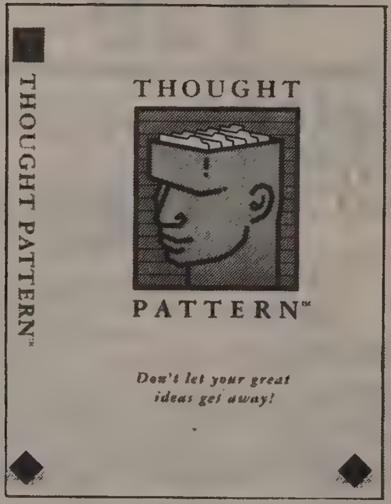
in data processing, information or decision sciences, computer science, computer information systems, or management information systems. ($24.95) *SQL and Relational Databases* by Soren Vang, Microtrend Books, Slawson Communications, Inc., 165 Vallecitos de Oro, San Marcos, CA 92069-1439.



TEACH YOURSELF DBASE III PLUS

dBASE III Plus is perhaps the most popular computer database management program in use today. This means if you're working on a PC with a database you will need to know something about dBASE III Plus. *Teaching Yourself dBASE III Plus* is designed to get you up and running with dBASE quickly and understand the important features of the program. The ideal reader is a new user to dBASE III Plus who's just starting out, or someone who has worked with the program sporadically and now wants to learn more. Each chapter provides examples and exercises for your own work; exercises that build on information you learned in previous chapters. ($19.95) *Teaching Yourself dBASE III Plus* by Charles Ackerman, Osborne McGraw-Hill, 2600 Tenth St., Berkeley, CA 94710.

PC SOFTWARE

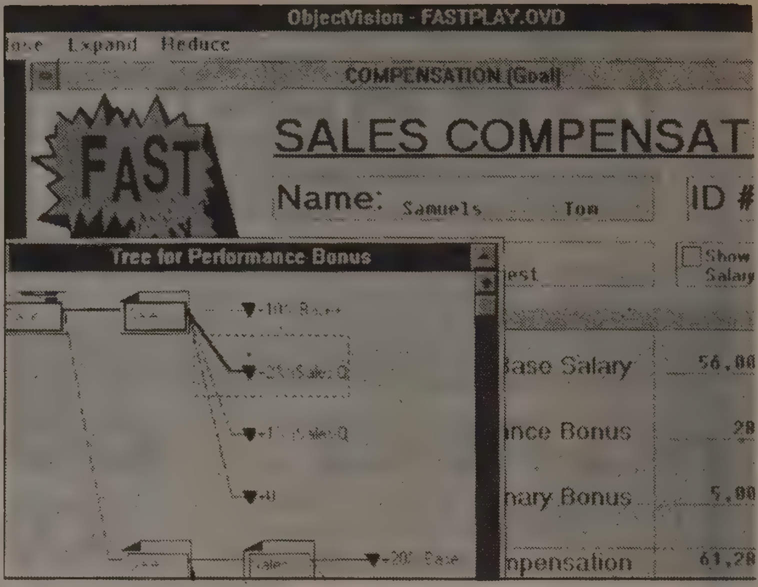


HYPERFILE WINDOWS: THE INTELLIGENT FILE CABINET

This software system allows you to file and find anything, including documents, pictures, descriptions, notes, words, and numbers. Running under Microsoft Windows 3.0, HyperFile lets you type, place, import, scan or fax anything into its file system. Important words and numbers are indexed automatically or selectively. ($495, single user; $995, network five node) All Easy Software Corp., 28052 Camino Capistrano, #201, Laguna Niguel, CA 92677. (714)364-2886, 1-800-ALL-EASY.

THE OBJECT OF THE VISION

ObjectVision is Borland's first product for Window's 3.0 and allows users to capture business procedures in interactive Windows applications that connect directly to corporate data. Integrating several key technologies, including decision trees and intelligent prompting, ObjectVision's visual programming capabilities allow end-users to easily create visual applications. An ObjectVision application automatically asks the user for only the necessary information. Data links create connection between fields on the application and database fields. Connectivity to Paradox, dBASE, Btrieve, ASCII data files, NetWare SQL, and DDE to other Windows 3.0 applications has been built into ObjectVision. ($495, it will be offered at a special introductory price of $99.95 through May 31, 1991) Borland International, Inc., (408)439-1622.



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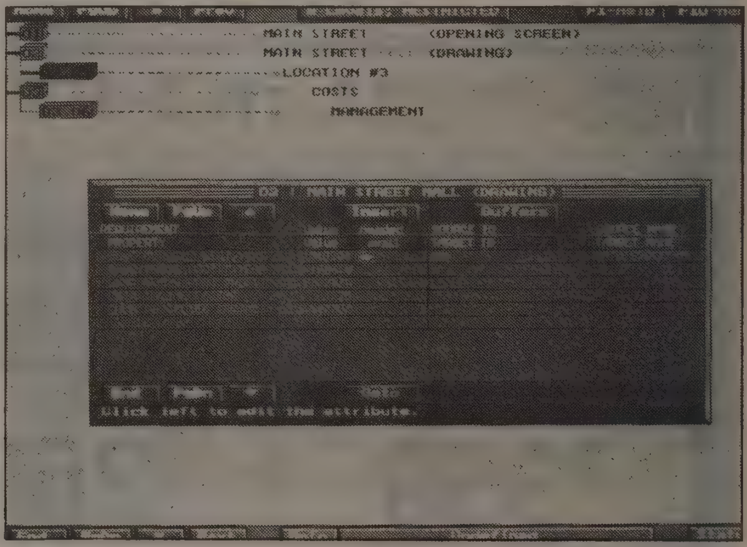
Mind's Eye offers a flexible, free-form database and hypermedia environment to help analyze management questions in real-life situations. Operating under its own graphical user interface, Mind's Eye offers the ease-of-use of Windows 3.0, but faster. Users can click on data or on any part of a picture, and derive and rearrange information to suit their needs. Data exchanges with Lotus 1-2-3 and dBASE allows users to access existing data and view it in new ways. Mind's Eye runs on less than 640K on a 286 PC or higher, with VGA graphics. ($695 with Quick Start templates, a professional version for corporate and government applications, and developers are available for $3,000) Mind's Eye, Inc., 18 Shangri-La Dr., Lexington Park, MD 20653. 1-800-255-2807.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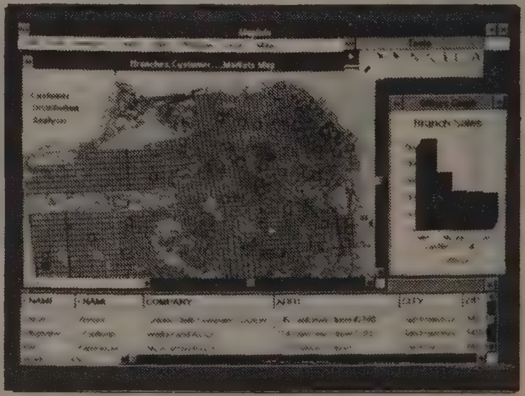

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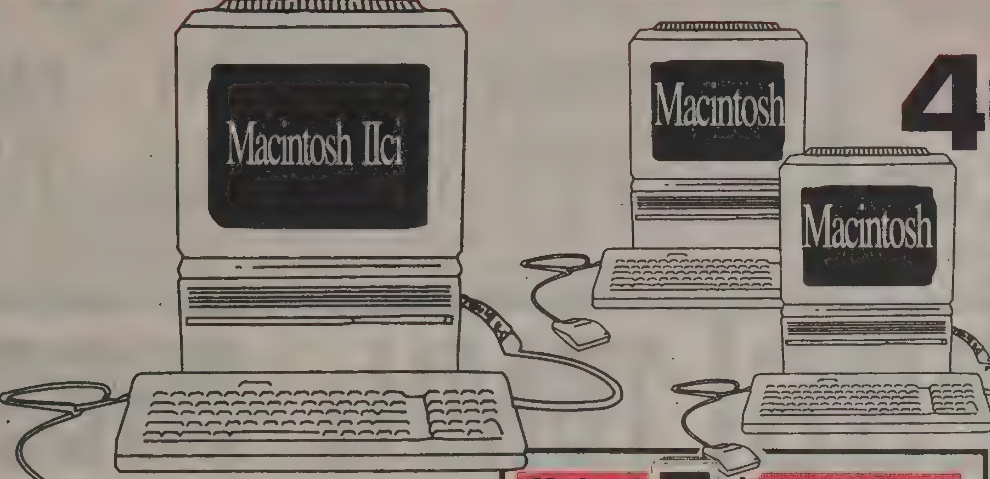
MAC @ Fry's ELECTRONICS



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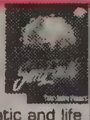

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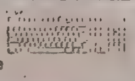

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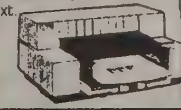

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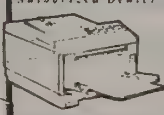

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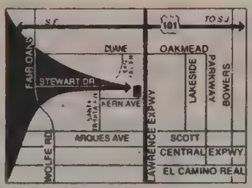

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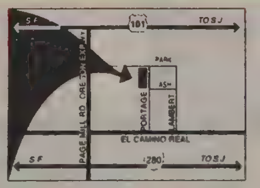

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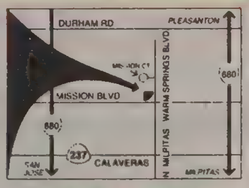

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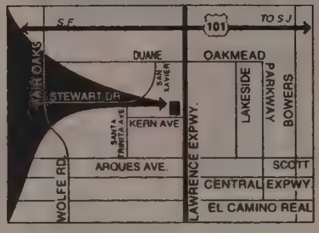
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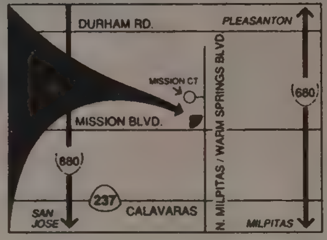
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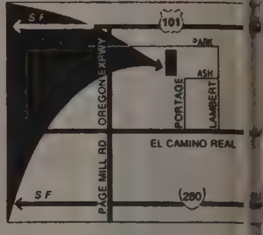
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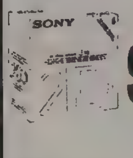

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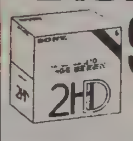

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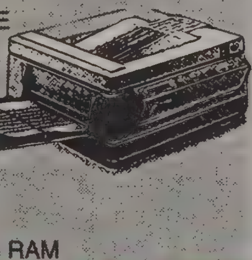

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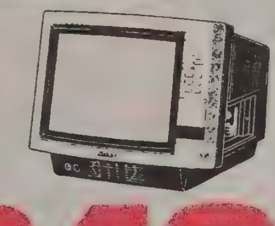

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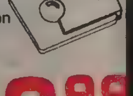

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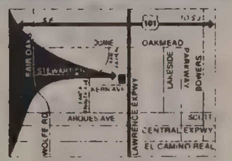

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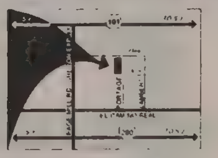

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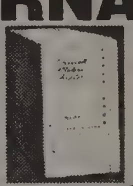

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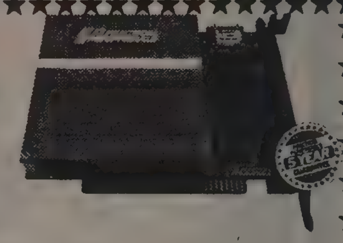

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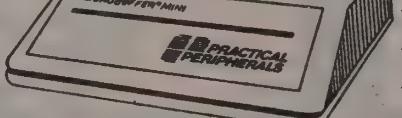

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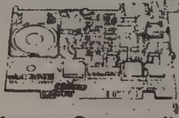

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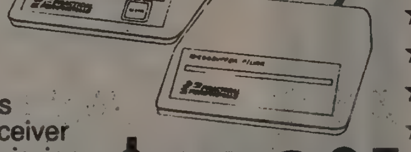

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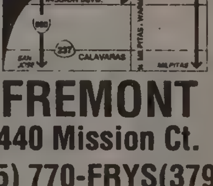

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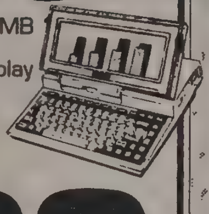

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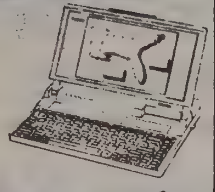

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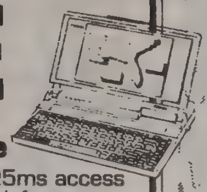

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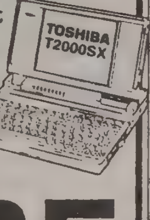
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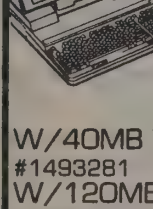

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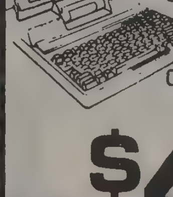

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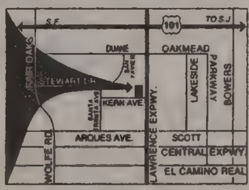
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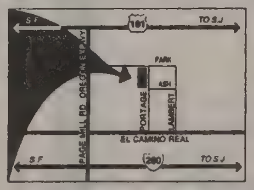
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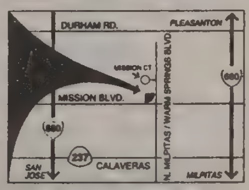
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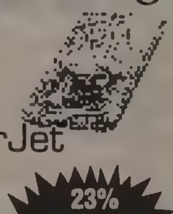

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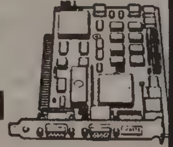

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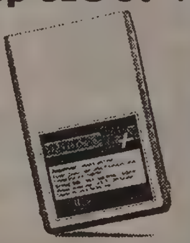

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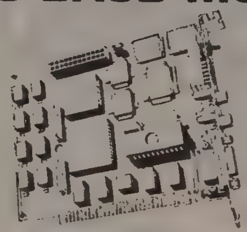

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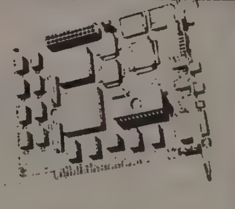

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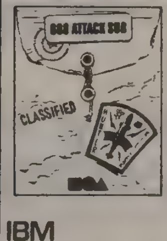

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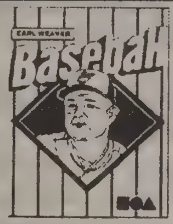

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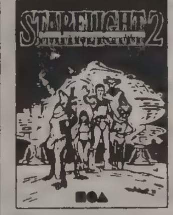

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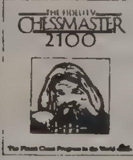

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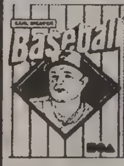

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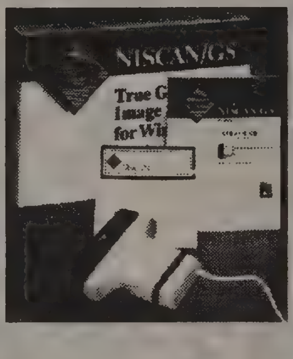
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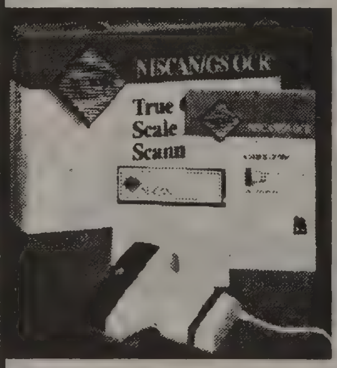
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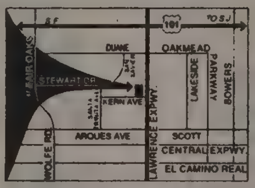
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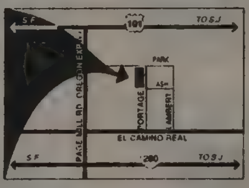
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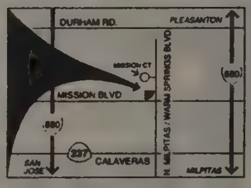
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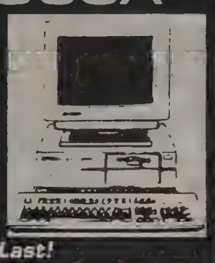

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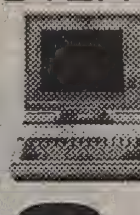

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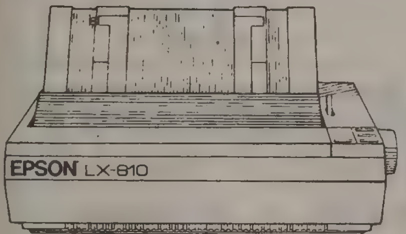

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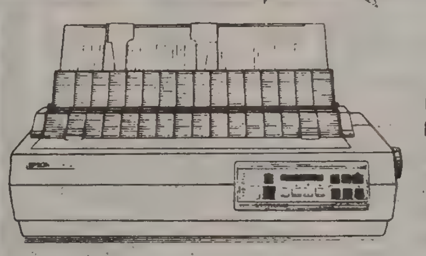

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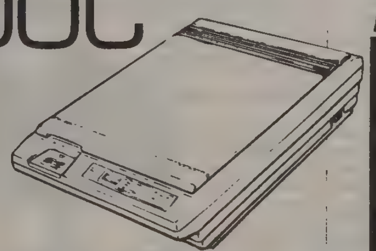

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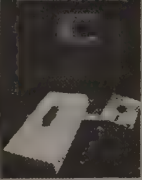

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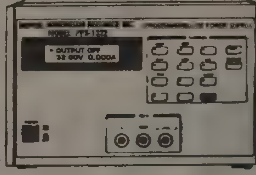

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Model PPS-1322
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ULTRA-LITE EPROM ERASER

- 50 EPROM tray with anti-septic pads
- Accepts a PC board 8" x 5" x 1"
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- Erases as many as 8 EPROMS in 15-20 minutes
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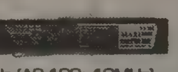

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- Tests logic signals up to 40 MHz (AR-100: 10MHz)
- Monitor 4 logic states (high,low, floating,pulse)
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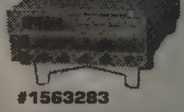

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Synchronouse TTL Output: 2Hz to 12 MHz

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Sweep modes Linear and Logramatic
External Frequency Counter
Range 5Hz to 100MHz
Time base 10MHz
Temperature +/- 10 ppm (0•C-50•C)
Resolution 6 1/2 Digit
Sensitivity 50m V P-P
Attenuation X1 and X20
Display 6 1/2 Digits with frequency ranging units(Hz, KHz, &MHz)

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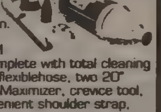
METRO DATA-VAC



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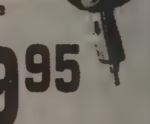
MASTER APPLIANCE



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- 12 CFM Air volume

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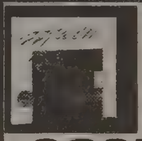

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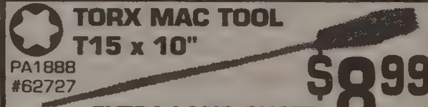

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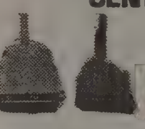

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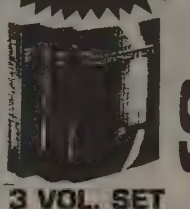

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- Soldering iron handle is heat-insulated for operator comfort

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- ACCURATE TEMPERATURE CONTROL
  From 330°C (620°F) to 430°C (800°F)
- INCREASED THERMAL CAPACITY
  Larger, 55W heating element and a double size nozzle thermal capacity over conventional desoldering tools gives greatly increased productivity.
- NO CLOGGING
- CERAMIC HEATING ELEMENT
- PORTABILITY
  Compact vacuum pump unit comes with a handle.It can be easily carried, allowing desoldering wherever there is a power source.
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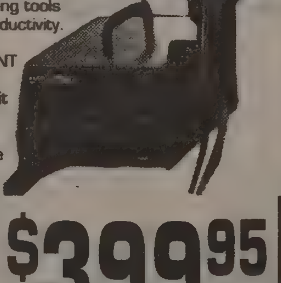

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55 WATT
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Combine the powerful desoldering tool and high performance soldering station with accurate control for more effective repair work.
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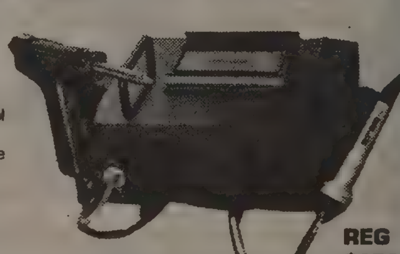

Power Consumption	170W
Output Voltage	24V
Soldering Temp	200~480°C (392~896°F)
Desoldering Temp	350~450°C (662~842°F)

700

REG $659

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Desoldering Gun	800L
Power Consumption	24V-60W
Filter Pipe	Heat-resistant Pyrex Glass
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Nozzle	Standard ø1.0

Soldering Iron	900M
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Q. Can I use my phone in other cities around the U.S. ?

A. Yes! You can use your phone anywhere that cellular services are available. An additional service charge may apply.

Q. What features do I get with GTE Mobilnet?

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continued from page 122

fers Hot Views, that allows users to simultaneously view data in three ways—maps, graphs and traditional rows and columns. ($1,000) Mapping Information Systems Corp., Henrik Hudson Bldg., 200 Broadway, Troy, NY 12180. 1-800-FAST-MAP.

GAMES REVIEW

By Mike Markowitz

FUN FLYER

By: GameTek
Published By: Fisher-Price
For: IBM PC and compatibles (256K and CGA) one 360, 5.25" disk
List Price: $14.95

Here is a very simple game, targeted at 3–8-year-old players. GameTek is a leading producer of arcade and Nintendo games, and Fisher-Price enjoys a good reputation in the toy business.

> **Here is a very simple game, targeted at 3–8-year-old players. There is something to be said for inexpensive, non-violent games that run on older, minimally configured systems.**

You "pilot" an animated plane across a scrolling landscape, picking up points by flying into snowflakes, kites, stars, and balloons. The program works with either a joystick or the cursor keys. The whining, irritating sound effects can, mercifully, be turned off by tapping the F1 key. There are three levels of increasing challenge. Complete, simple instructions can be displayed during startup, in the big jaggy typeface that is characteristic of CGA graphics.

The game reinforces learning of number-directional concepts. The game prompts the player to enter his or her name. The only way to quit is to hit the Escape key. It might be pointed out that flying into things is a rather negative sort of training for tomorrow's pilots.

There is something to be said for inexpensive, non-violent games that run on older, minimally configured systems. Apparently, the game is not available on 3.5" media, for users who only have that kind of disk drive. It is not copy protected, and hard disk installation was a simple matter of copying the files into a new subdirectory.

JOE MONTANA FOOTBALL

Published By: SEGA
For: IBM PC and compatibles (640K, VGA, MCGA, EGA, CGA, or Tandy color graphics, one or two joysticks, 1.5MB of hard disk storage space strongly recommended)
List Price: $49.95

When he's not busy selling underwear, the highest-rated quarterback in NFL history is a whiz at negotiating contracts in the video-game and computer entertainment industry.

Joe Montana Football was designed with significant input from the great 49er himself, who has been an avid computer game player for about eight years.

The game provides multiple levels of play—you can take the role of owner, coach, or any position for twenty-eight different teams. You can switch between players in the middle of a play as well as between different views of the action—from the player's perspective or from different camera positions. There is an impressive frame-by-frame Instant Replay feature.

You can play against the computer, or against another human player. You can design your own plays and save them in a "Play book," along with a library of standard and classic plays. The game supports leading audio cards (Roland MT-32, AdLib, Tandy) and uses digitized voice, music, and sound effects.

The importance of football in American culture ensures that major marketing hype will always be devoted to selling the latest football simulation. In the case of Joe Montana Football, however, it is also apparent that major programming and design talent was devoted to creating the product. It is a hot and deep simulation, not just a simple port of a video game cartridge.

STUNT DRIVER

Published By: Spectrum Holobyte
List Price: $49.95

STUNT

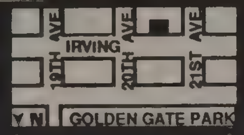
Published By: Brøderbund
List Price: $49.95

It is not unusual for games of the same subject to be released by two or more publishers at almost the same time. Stunts from Brøderbund and Stunt Driver from Spectrum Holobyte are designed to appeal to the same young, male, game-loving audience.

Despite the state-of-the-art animation and sound, and the best efforts of skilled teams of programmers, my personal feeling is that driving simulations of most kinds are very unsatisfactory games. The joystick, keyboard, and mouse are fine input devices, but together or separately they are a total kinesthetic failure at reproducing the feel and action of steering wheel, clutch, and brake pedal.

Without a major breakthrough on the user interface, computer games with cars are rapidly approaching a dead end.

continued



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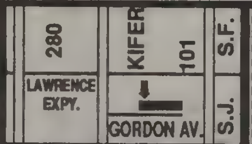

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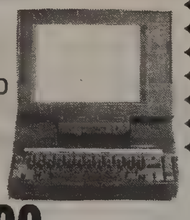

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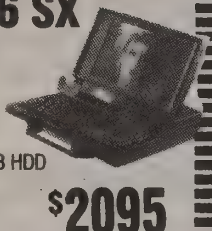

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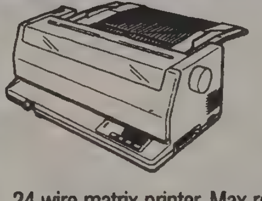

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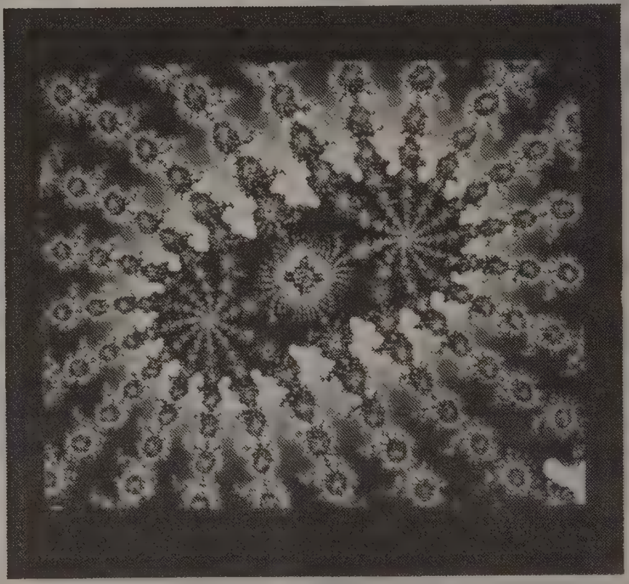
PC SOFTWARE REVIEW

CHAOS: THE SOFTWARE

Manufactured By: Autodesk
List Price: $59.95
Reviewed By: Birrell Walsh

Good mathematics is beautiful. Good mathematics is also a performance art. Studying equations is a lot like reading music—the beauty is in the performance. The form makes the formulae worth finding.

Why this little speech? It is because Autodesk, the extraordinary company that makes AutoCAD, has released a new program that "performs" the mathematics of Chaos. With a clean interface that allows very fine control, Chaos: The Software generates brilliant color images of the most abstract mathematical sets. It appeals as much to a video-game addict as to a mathematician. And the price is an amazingly low $59.95.



There are not one but six programs in Chaos:, The Software. The first generates the classic Mandelbrot and Julia sets. A second is the deceptively simple Magnets and Pendulum. With it you discover just how complex the orbit of a small object can be in space. The third program produces Strange Attractors and the almost-but-never-quite-repetitive paths which systems follow around them. Strange, Henon, and Yorke attractors are also available. With The Chaos Game you can examine the interaction of randomness and rules in the generation of familiar forms. Fractal Forgeries will generate cloudscapes, mountains, a topo map, or the view of a planet from space. The program creates each by fractal rules. (Similar algorithms were used in the Star Trek films to create the Genesis Planet.) Finally, there is Toy Universes, a program to explore cellular automata. It allows you to generate thousands of other worlds in which cells reproduce and change according to simple rule systems. The program includes Conway's "Life", which was discussed many years ago in *Scientific American.*

This package is remarkable at any price. At $59.95 I can only assume that Autodesk is trolling for people who love mathematics well done. The quality of Chaos speaks well for the whole line of Autodesk products. (Autodesk, Inc., 1-800-688-2344)

DR DOS 5.0

Manufactured By: Digital Research
List Price: $199
Reviewed By: Aubrey Pilgram

You've probably heard that Microsoft is working on a new version of DOS to be called DOS 5.0. But, have you heard about Digital Research's DR DOS 5.0; it's available now and has many excellent new features. It is compatible with all versions of MS-DOS and uses the same commands. DR DOS will run on any DOS PC from an XT up to the 486. On the 286, 386, and 486 it allows greater memory management.

Gary Kindall, founder of Digital Research, was the inventor of the CP/M Disk Operating System in the early days of personal computers. There is a story that when IBM developed the PC they first tried to contact Gary to write the PC-DOS. Gary happened to be away from home, so they went up to Redmond, WA and asked Bill Gates to develop it. The PC-DOS and MS-DOS developed by Bill Gates's Microsoft had several close similarities to the CP/M developed by Gary Kildall. The rest, of course, is history.

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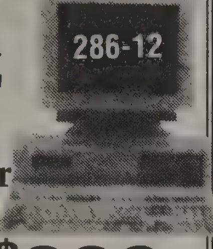

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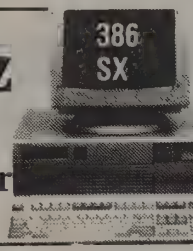

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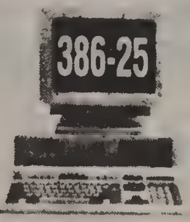

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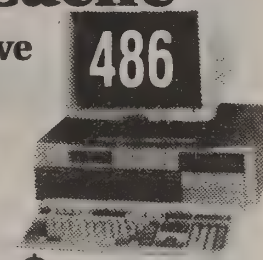

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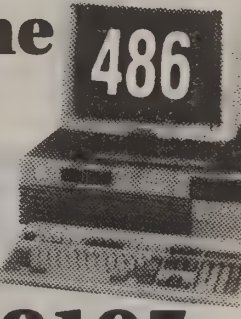

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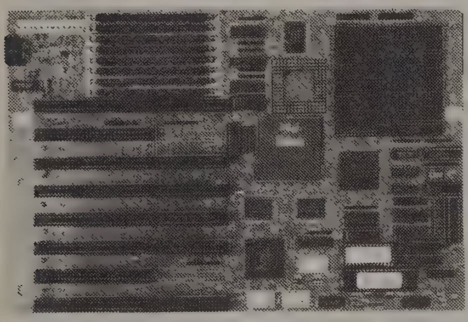

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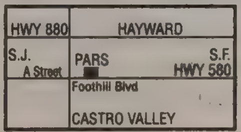

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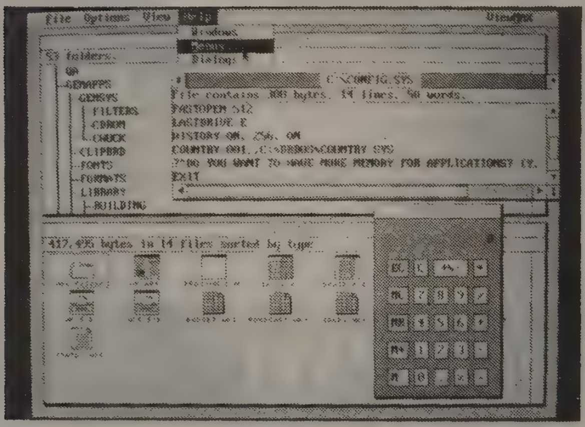
Features Of DR DOS 5.0

One of the best features of DR DOS is its excellent manual. It is helpful to beginners as well as old pros. Some of the other features are: Ease of installation and setup, advanced memory management, a ViewMax user interface for a mouse, a full-screen editor, built-in help for all external commands and utilities, large disk partitions up to 512MB, LIM memory support for expanded memory, and other good features and utilities.

DR DOS 5.0 is very easy to install. Previously, if you wanted to install a later version of DOS on a hard disk, you had to reformat the disk. With DR DOS 5.0, you merely copy the files onto the hard disk. It has a menu that lets you select the options you want installed. DR DOS 5.0 will not replace the DOS DEBUG.COM because in DR DOS it is called the DIS debugging tool. It is much more comprehensive that the DOS DEBUG and offers on-screen help when the ? or ?? is entered.

Upper Memory is the memory between 640K and 1MB and is reserved by DOS for certain ROM BIOS functions and for the video display adapter. With DR DOS 5.0, or example, you may have several drivers in your Config.Sys file that are loaded into your 640K RAM when you boot up. You may also load in one or more terminate and stay resident (TRS) programs that go into the 640K area. With all of this you could end up with less than 400K of working RAM—not enough RAM to run many larger programs. DR DOS 5.0 gives you the option of loading MemoryMax software when you boot up. This loads TSRs and drivers into areas of memory above 640K.



```
FASTOPEN 512
LASTDRIVE E
HISTORY ON, 256, ON
COUNTRY 001,,C:\DRDOS\COUNTRY.SYS
?"DO YOU WANT TO HAVE MORE MEMORY FOR APPLICATIONS? (Y,
EXIT
```

ViewMax is an optional user interface with icons that look a bit like Windows. It lets you use a mouse to open files, copy, delete and perform many other functions.

The full-screen editor is essentially an ASCII word processor. It uses many of the commands found in WordStar. It has online help and is very easy to use.

Just like MS-DOS, DR DOS 5.0 is divided into internal commands and external commands. The internal commands such as CHDIR/CD, CLS, COPY, DATE, DEL, DIR and several other often used commands are loaded into memory by Command.Com and are available from any directory or drive. They are fairly simple to learn so there is no on-screen help for these commands.

The external commands are those that are used less often such as BACKUP, CACHE, DISKCOPY, EDITOR, FDISK, MODE, PASSWORD and several others. To get on-screen help for any external command or utility, you merely have to type the command followed by /H.

Some Extra Commands Not Found In MS-DOS

DR DOS has several commands not found in MS-DOS:

- Cache. The DR DOS Cache command allows you to set up a hard disk cache in extended or expanded memory.
- DELQ, ERAQ. Both of these commands erase files the same as DEL and ERA or ERASE. But when the Q is added to them, they will pause and ask if you want to erase the file.
- XDEL. This command can be used to delete multiple files and remove empty subdirectories. Several switches can be used in conjunction with it. Normally when a file is erased or deleted, only the directory is amended. The data is still on the disk unless it is written over by another file. (This fact contributed to the downfall of Col. Oliver North.) XDEL/O will overwrite a file as it is erased so that it can never be recovered.
- FILELINK is a utility that allows files to be transferred from one computer to another by using the serial ports. It requires a Null Modem type cable. By connecting two computers together, this utility can provide most of the benefits of a poor man's LAN.
- XDIR. This is an expanded version of the DIR command that has several switches. By adding an A, D, H, R, or S, you can include or exclude files with certain attributes.

I have been quite pleased with DR DOS. I have not had to learn many new commands, and the mouse and ViewMax makes it almost as easy to use as a Macintosh. (Digital Research, Inc., 70 Garden Ct., Monterey, CA 93940. 408/649-3986.)

MAC SOFTWARE REVIEW

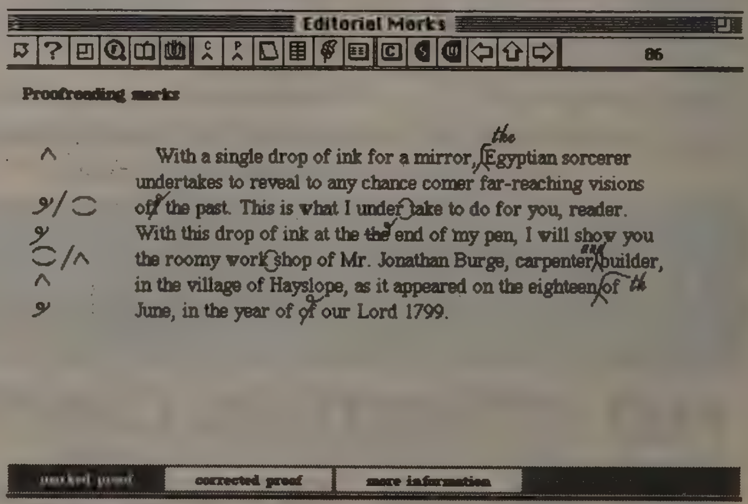
EDITORIAL ADVISOR

Manufactured By: Petroglyph
List Price: $149.95
For: Macintosh System 6.0.5 or higher (or A/UX 2.0 or higher), hard disk, 1MB RAM (2MB recommended).
Reviewed By: Matthew Leeds

The Editorial Advisor is a comprehensive online reference library with detailed information on grammar, punctuation, style, usage, composition, indexing, and more. It is not a grammar or style checker since there is rarely a single correct style for a given piece of writing.

Editorial Advisor runs under Hypercard 2.0 and takes advantage of several of its new features. The package comprises a main library of reference information with two indexes, supplementary reference sections on the use of copyediting and proofreading marks, and three templates for users: a Copy Editor's Style Sheet, a House Style Sheet, and a House Word List. Also included are an online help feature, search functions, bookmarks, and a notepad.

Using Editorial Advisor is at first a little confusing. The main interface is a row of icons whose function is not readily apparent by their visual appearance. With a little practice however, both the power and advantages of Editorial Advisor become clear. Since the main library



With a single drop of ink for a mirror, Egyptian sorcerer undertakes to reveal to any chance comer far-reaching visions off the past. This is what I under take to do for you, reader. With this drop of ink at the the end of my pen, I will show you the roomy work shop of Mr. Jonathan Burge, carpenter builder, in the village of Hayslope, as it appeared on the eighteen of th June, in the year of of our Lord 1799.

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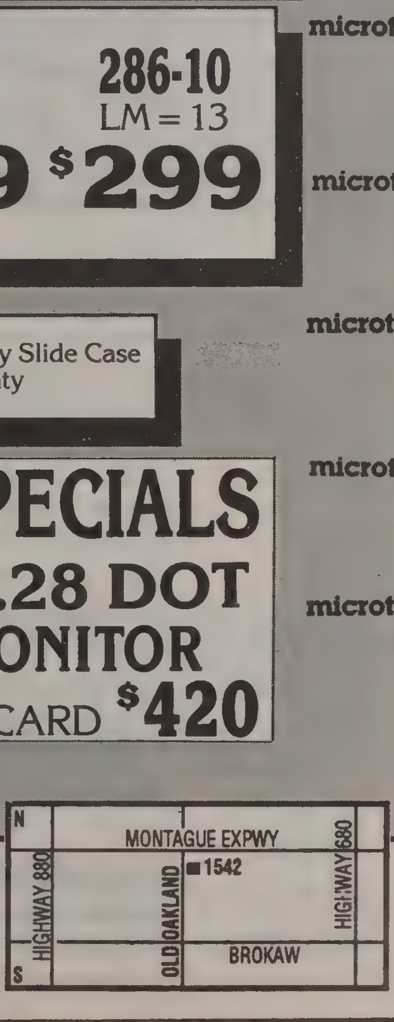

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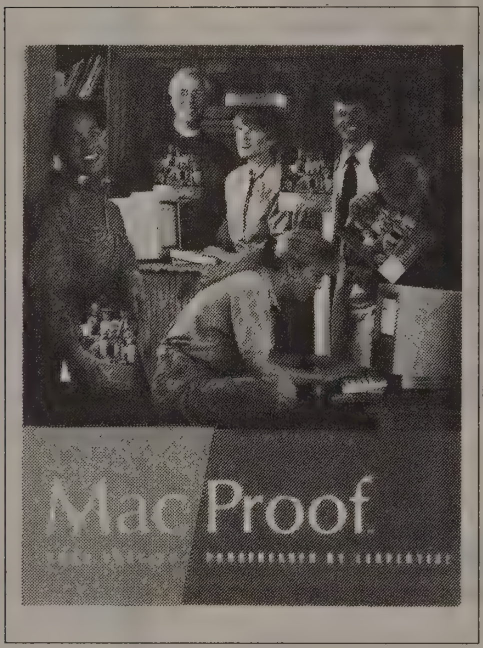
is organized hierarchically, you can find a specific reference from several directions. A subject index lists specific subjects and a word index lists words and word elements. The table of contents lists major topic groups; clicking on one lists subtopics.

If you write or edit for a living, Editorial Advisor is a necessity. It's much easier to check a reference when it's online, and if it's easier, you're more likely to do so. In addition, since Editorial Advisor contains information from eleven different major sources, it allows you to weigh and balance your choice of a correct style. Its scope, speed, and convenience will keep your reference books on the bookshelf. (Petroglyph, Inc., 123 Townsend, Suite 345, San Francisco, CA 94107)

MACPROOF 3.2.1

Manufactured By: Lexpertise Linguistic Software
List Price: $195
Reviewed By: Matthew Leeds

MacProof is a DA that is useful in checking grammar and spelling while using word processors or page layout programs. Although it is unable to check context, it is very useful in checking style and usage.



There are four categories of functions that MacProof can perform: mechanics, usage, style, and structure. The program uses the clipboard to transfer highlighted text back and forth from the originating application. MacProof preserves the formatting information from MacWrite 4.6 and 5.0, MacWrite II 1.0, Word 4.0, MindWrite 1.0 and 2.0, and PageMaker 3.0. It can be used with other applications, but the formatting information contained in clipped text will not be preserved.

In the mechanics section you can check spelling, punctuation, capitalization and double words; in usage you check for words or phrases that are offensive, often confused, too formal, imprecise, wordy, nonstandard, or other constructions that you add; in style you check for "Be" verbs and verbs made into nouns (nominalizations); and structure checks include counts on the number of words, sentences, repeated words, and paragraphs.

At first I found MacProof difficult to use. The interface is not as intuitive as I hoped, and the program runs slowly. It is not suitable for checking a large document, but comfortably handles a few pages at a time. Once I began to use it regularly, however, I found that familiarity bred comfort, if not contentment. It will never replace an experienced editor's proofreading, but it does serve as a functional aid in producing better writing. (Lexpertise Linguistic Software, Inc., 9 Exchange Pl., Suite 900, Salt Lake City, UT 84111. 801/350-9100)

PC HARDWARE REVIEW

POSTSCRIPT CARTRIDGE FOR HP LASERJET II

Manufactured By: Adobe Systems
List Price: $495
Reviewed By: Woody Liswood

The latest PostScript cartridge for the HP LaserJet II is from Adobe, and it does it right. It allows the HP to print at 8 pages per minute (ppm), rather than the 1-2-ppm using other popular cartridges. And, it works with all of my applications. Only the Princeton Graphics board set runs faster, but it has problems with Windows 3.0 PostScript.

The Adobe PostScript Cartridge is packaged with a set of font software for installation into your programs and into Windows. It is also accompanied by a small TSR from LaserTools that monitors the printer port and switches the cartridge from PostScript to PCL as appropriate. The cartridge did not recognize some of my HP programs during installation. It's easy to use the control panel to switch between modes and regain some memory.

The accompanying software can generate screen fonts for Windows that match the cartridge fonts. I spent two hours installing a variety of fonts. However, I was unhappy with the results and finally took everything back out of the INI files and let Windows supply the fonts.

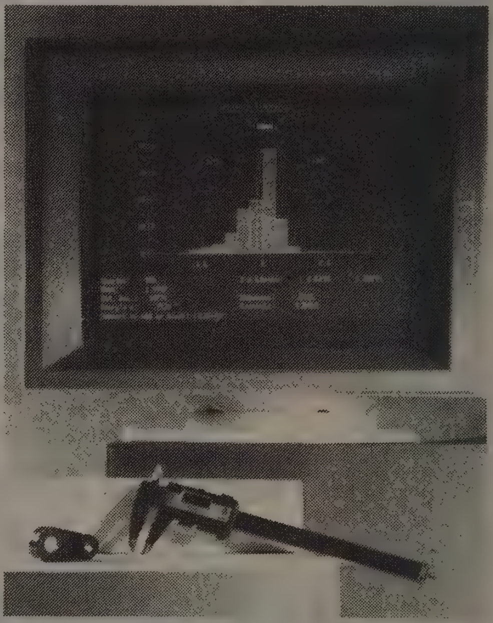
You will need at least 1.5MB of memory in the printer for letter size paper and 2.5MB for ledger size paper. (Adobe Systems, Inc.,1585 Charleston Rd., Mountain View, CA 94039-7900. 1-800-344-8355, 415/961-4400)

PC SOFTWARE REVIEW

QUALITY ANALYST: A STATISTICAL PROCESS MONITOR PROGRAM

Manufactured By: Northwest Analytical, Inc.
List Price: $695, single copy; $2500, for a network
Reviewed By: Robert D. Athey, Jr.

Quality Analyst (QA) is a companion program set to STATPAK, the statistics program set from Northwest Analytical. The two are separate and different programs, though they both use some of the same subroutines for calculations and graphics. QA does not need a math chip (8087 or the like), so it will run on almost any personal computer. (For a review of STATPAK 4.12, see *MicroTimes* #75, October 29, 1990.)



The statistical process control (SPC) for industry has recently become a "hot" (although it is by no means a new) process. The whole concept of SPC is quite simple. The manufacturing process creates things, and someone needs to check to see if they meet the customer's need—in other words, quality testing. Good management records the results, and monitors the quality over time. Watching the quality

continued

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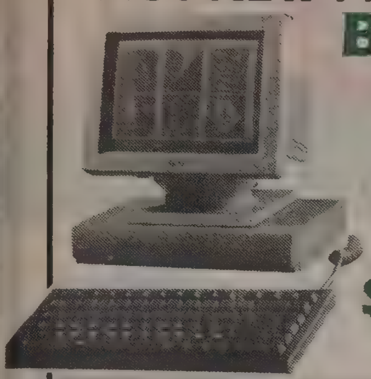

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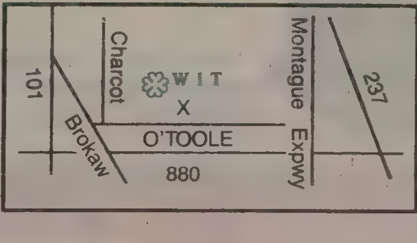

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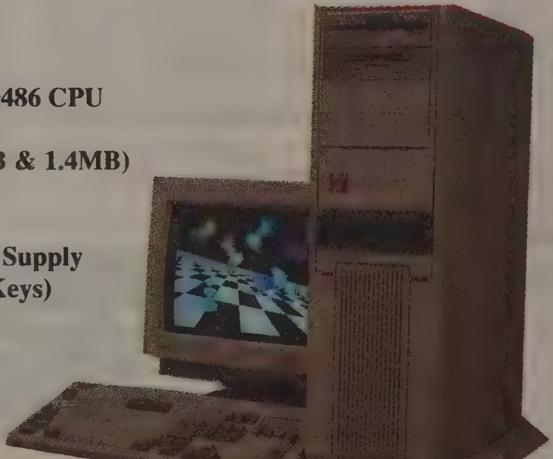

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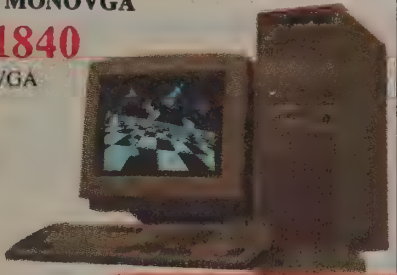

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LANDMARK=21MHz

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LANDMARK=15.6MHz

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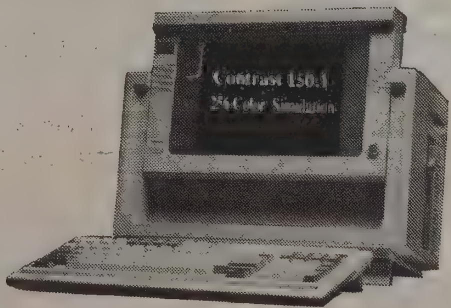

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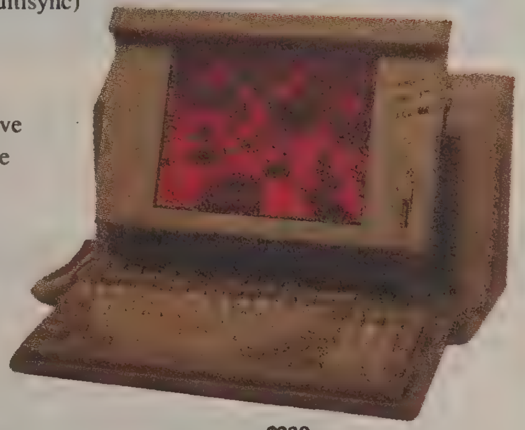

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records allows manufacturers to change the process as the quality shifts—or maintain quality control. The SPC idea is to characterize the quality records with the mathematics of statistical tools.

The QA program package helps you set control limits based on the historical performance to determine the expected error as the standard deviation. You can then define the control limits at three times the standard deviation, so 99% of the values will fall into the distribution. Narrower limits than the three standard deviations require that you price the product higher accordingly to account for waste, and that you find some other productive use for the off-spec material.

If you have a need for statistical process control, this is just the trick for your little computer. The program has been favorably reviewed in other computer magazines as well as in quality concerned magazines. It will serve me and my clients well. (Northwest Analytical Inc., 520 N.W. Davis St., Portland, OR 97209. 503/224-7727)

RAMTEST

Manufactured By: Brown Bag Software
List Price: $96.95
Reviewed By: Robert D. Athey, Jr.

The memory in computers depends on chips—complex electronic circuits (read thin conductive lines that act like wires) that are laid down on non-conductive substrates. As the technology has progressed, they've made the circuits of finer lines. However, shrinking the circuitry can cause problems. For example, an extra thin spot in the "wire" can burn out when the power surge hits too hard. These break the circuitry, leaving you with a dead chip.

The computers of today have three kinds of "volatile" electronic memory: RAM (Random Access Memory), EMM (Expanded Memory) or EMS (Extended Memory). These are different from the magnetic (floppy or hard disks) or optical memories used for storage. The electronic memory is initiated when you turn on the computer, and is used for temporary storage of data or programs while they are being used. When there is a burn-out or corrosion problem, your computer will give you a strange message like "memory parity error" or something else equally unintelligible.

Although some computers check the RAM and any additional memory at start-up, problems show up simply as a statement of the usable memory. While these start-up tests don't tell you why the nominal memory

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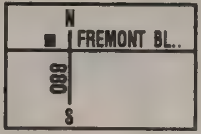

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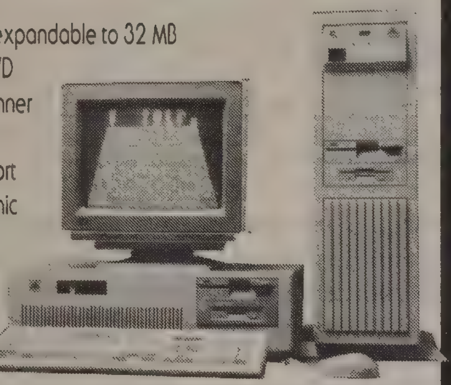

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☐ 2 Serial, 1 Parallel, 1 Game Port
☐ 230W PS w/Case Holds 5 Drives
☐ 101 Enhanced Keyboard

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LANDMARK = 56
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☐ Socket 80387 & AMI BIOS
☐ 2X32 Bit, 5X16 Bit, 1X8 Bit Slots
☐ Real Time Clock w/Battery Backup
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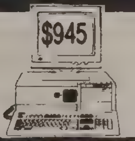
$945 386-25 MHz 64K CACHE



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LANDMARK = 21
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☐ Socket 80287 & AMI BIOS
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LANDMARK = 16
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☐ Real Time Clock w/Battery Backup
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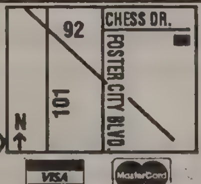

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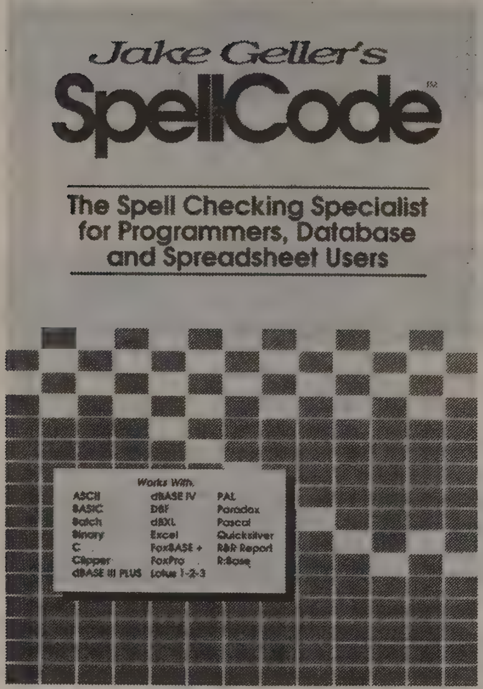
isn't completely there, most computers don't tell you anything. Both of these issues are solved with RAMTEST from Brown Bag Software, a shareware house.

RAMTEST is simple to use. After typing "ramtest" to get the title screen, the next key strike brings up the menu screen. The menu is set up with a number of command options arrayed across the top of the screen. About midscreen, there's a box to show the memory configuration. This lets you know how much RAM, EMM and EMS is there and how much is available. There is a flashing bar in a box labelled as "TEST MENU", which will initiate the RAM test. The box will contain other options only if there is additional (extended or expanded) memory possible to test. The escape key allows you to exit to the standard operating system prompt.

I learned that an infrequent, but frustrating, problem in my three-year-old Zenith Z-159 was caused by a chip problem in my extended memory. RAMTEST flashed up the location of the problem, and the mis-information that resided there. (Brown Bag Software, Inc., 2155 Bascom Ave., Campbell, CA 95008. 408/559-4545)

SPELLCODE

Published By: Geller Software Laboratories
List Price: $69
Reviewed By: Woody Liswood



What do Lotus worksheets, Excel worksheets, FoxPro memo files, Paradox Databases, R&R report library files, dBASE files, Clipper, C, Pascal, Basic, and R:Base have in common? Each can be spell-checked by SpellCode.

One of the greatest things about word processing is the spell checker. Now, SpellCode allows you to check spelling in these other file formats where a spell checker hasn't existed. If you work with spreadsheets or databases for a living, SpellCode gives you the opportunity to clean up your documents before you make your presentations. While SpellCode doesn't let you program intelligent, context-sensitive, and incisive messages and column headings any better, it does make it more difficult to commit the obvious errors.

SpellCode has a good understanding of program syntax, and treats the keywords and structure that abound in databases and spreadsheets as correct. SpellCode checks the words that are meant to be seen by the end-user. In case you need help in variable names, you can also check everything in the file.

SpellCode works with two windows on the screen. In the top window, text is displayed with the unknown word, highlighted. The lower window displays suggested words. When beginning, SpellCode lets you specify the path for the file to be checked, the name of the dictionaries to use, the extension of the files to be checked and what type of file formats you are going to check.

The program is driven by function keys. Using them, you can skip words, add to the dictionary, replace, and so on. Just what you would expect.

SpellCode also has what it calls a non-interactive mode. It will check the files for you, but not make the corrections. Instead, it prepares a report with the suspect word and its line number in the file.

SpellCode isn't a complicated program. It runs. It works. Many of us who work in environments other than a word processor need this program. (Geller Software Laboratories, Inc., 35 Stephen St., Montclair, NJ 07042. 201/746-7402)

TRADING POST

Published By: Laser Tools
List Price: $79
Reviewed By: Woody Liswood

If you have a PostScript printer, Trading Post is a necessity. It lets you use your PostScript printer with applications that don't have a PostScript driver. I find it particularly useful with my favorite database, PC FILE.

As a utility, it's easy to install and use. Configure Trading Post so that it knows the type of printers you have, the port the printer will use, which port Trading Post should manager, and which ports will be used for PostScript and non-PostScript printing. Lastly, Trading Post needs to know the fonts and orientation you want when you use the text port.

TRADING POST

After you select and assign the printer, you will assign a managed port for text. This is where you will have the non-PostScript supporting applications send data. In Trading Post, the text port intercepts ASCII printing and converts it to PostScript so that your printer will understand it.

You can set your text printer parameters to use any of the PostScript fonts, styles, point sizes, paper sizes, orientation, lines per page, as well as set all of your margins. A useful utility. (Laser Tools Corp., 5900 Hollis St., Emeryville, CA 94608. 415/420-8777)

FACELIFT FOR WORDPERFECT

Manufactured By: Bitstream
List Price: $69
Reviewed By: Lenny Bailes

Facelift is Bitstream's second-generation font technology. It improves print speed (in some cases), and frees up hard disk storage space. This is accomplished by generating fonts in memory from scalable typeface outlines. This process replaces the soft font down-

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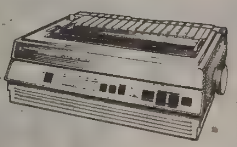

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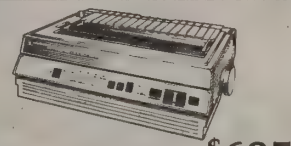

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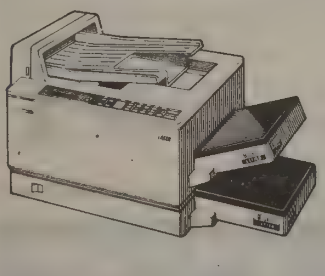

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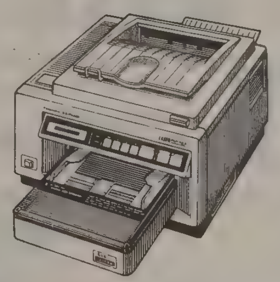

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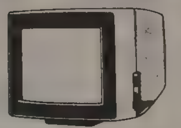

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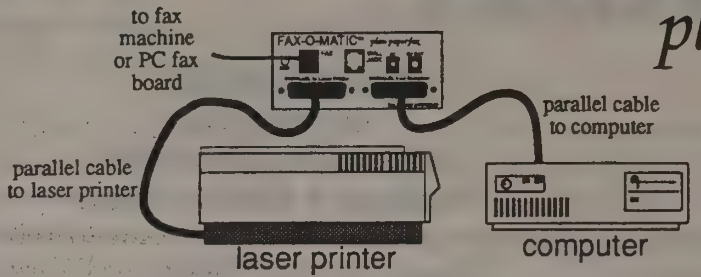
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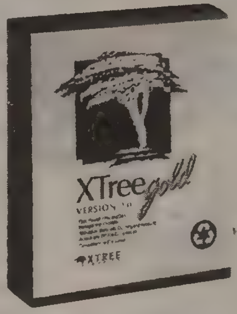

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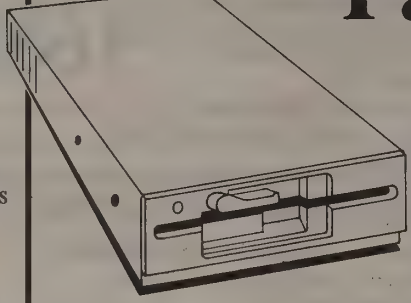

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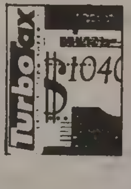

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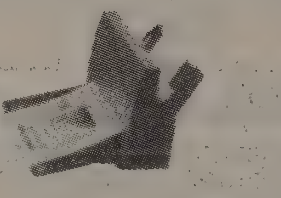

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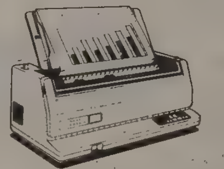

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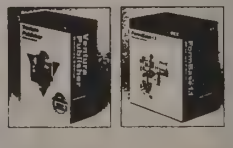

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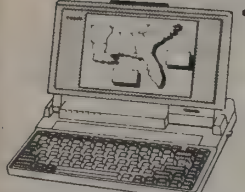

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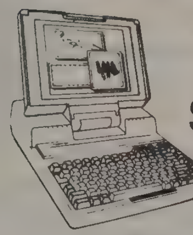

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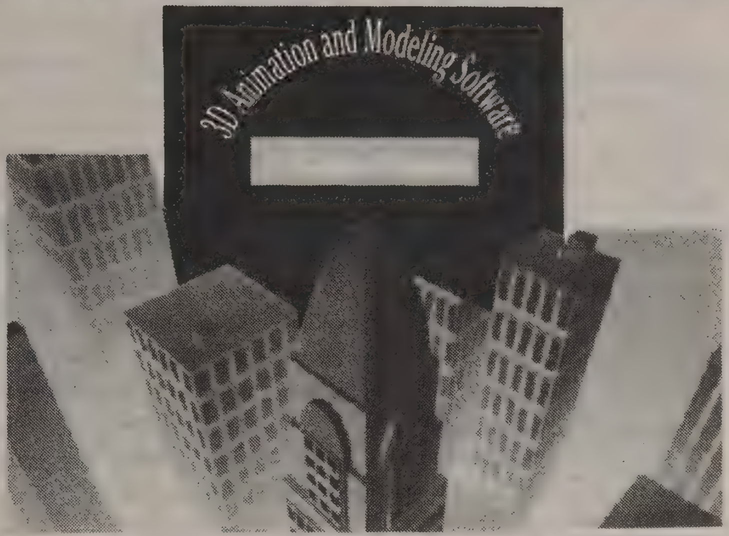

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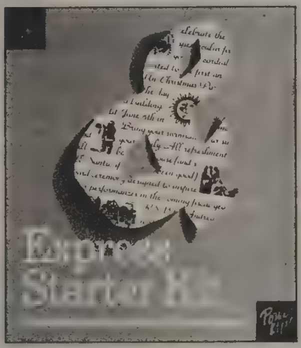

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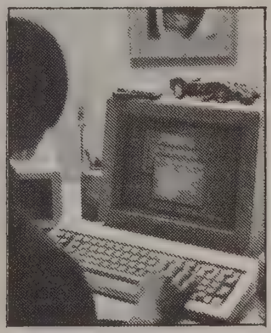

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load procedure used by the older Bitstream Fontware kit.

In the past, using Bitstream's Fontware with WordPerfect meant time spent on a lengthy installation procedure, and time spent waiting for fonts to be downloaded to the printer.

The technique of generating bitmapped fonts on the fly from outlines was pioneered by SWFTE in their Glyphix package. Facelift simplifies the process even further. It takes only ten minutes to install, and transparently adds typefaces for the LaserJet family. When you print a document in WordPerfect, a small resident utility intercepts font requests. Scaled typefaces are produced instantly in memory. Printing begins within a minute, with no need for printer initialization or soft font downloads.

Font outlines included in the package are Swiss and Dutch in four weights (Roman, Italic, Bold and Bold Italic). Park Avenue, Cooper Black, Brush Script, Formal Script, and Helvetica monospace are provided in one weight each.

Clearly, the amount of storage space to be saved counts to Facelift's advantage. Bitstream's fonts are also among the cleanest and most attractive in the industry.

Facelift for WordPerfect works only with the Hewlett-Packard family of LaserJets. There is no support for printers.

Once installed, the fonts can be used in the normal way from within WordPerfect 5.0 or 5.1. Facelift can coexist with earlier sets of Fontware fonts. It won't affect the Fontware download and printing time.

For short documents with multiple fonts on a page, Facelift is much faster than Fontware. On long documents Fontware is faster. With two to three fonts present, Facelift caused my LaserJet II to slow down to four to five pages a minute. With Fontware, output was six to seven pages a minute, (not including the initialization time). Bitstream is aware of this anomaly, and is working to speed up Facelift's performance.

Facelift and its font outlines occupy about 1.5MB of hard disk space. Fontware, with half as many fonts, will occupy 3 to 4MB. Clearly, the amount of storage space to be saved counts to Facelift's advantage. Bitstream's fonts are also among the cleanest and most attractive in the industry. (Bitstream, Inc., Dept. SPDO, 215 First St., Cambridge, MA 02142. 617/497-6222)

LAPTOPS

POWERFUL TOSHIBA NOTEBOOK

The T2000SX is the industry's first portable computer to use nickel hydride battery technology. Equipped with a 16MHz 386SX microprocessor and a VGA black and white display, the 6.9 lb. notebook computer offers a balanced combination of power, portability, ergonomic design, and value. Toshiba's new nickel hydride battery offers a 22% improvement over enhanced NiCad batteries in power capacity per unit weight. This new battery also assures easier use and low maintenance since it eliminates the "memory effect" of NiCad batteries, which demand frequent complete discharging to optimum battery life. ($4,999 with a 20MB hard disk drive, $5,499 with 40MB) Toshiba America Information Systems, Inc., Computer Systems Division, 9740 Irvine Blvd., Irvine, CA 92718. 1-800-334-3445.

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T2000SX

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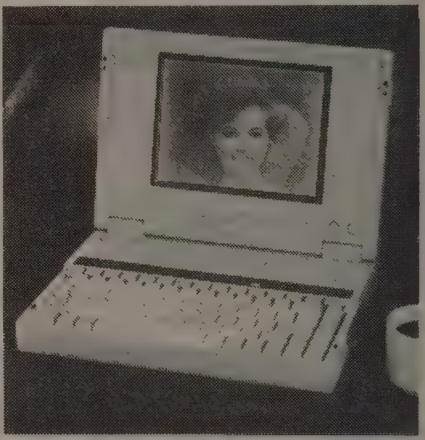
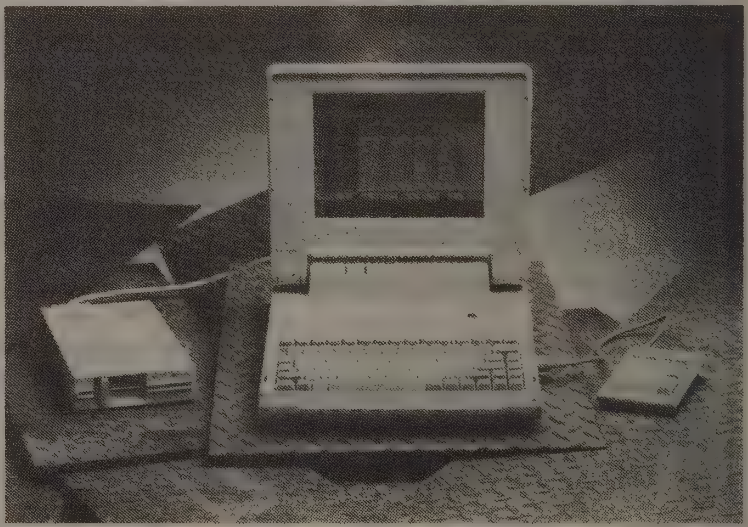
The Commax NT-386SX, weighing only 7 lbs., fits into a briefcase, yet is powerful enough to run Windows 3.0. Featuring an Intel 16MHz 386SX microprocessor, this new notebook computer comes standard with 1MB RAM, expandable to 5MB, a 1.44MB 3.5" floppy drive, and a 20MB hard disk drive. The NT-386SX is powered by a rechargeable NiCad battery providing three hours of operation. Flexibility for the user is insured by the ability to connect to an external VGA monitor as well as an external mini-dip plug for connections to an AT external keyboard. Other I/O ports allow connection to external disk drives and serial devices. ($2,995) Commax Technologies, Inc., 2031 Concourse Dr., San Jose, CA 95131. (408)435-5000.





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With a fast two-hour battery recharge, and long-life four-hour NiCad batteries, the Lyte-Byte 5300 is the first battery-operated laptop from Micro Express. This 16MHz 386SX-based PC comes with 1MB RAM, VGA gas-plasma display, 40MB hard disk drive, and 1.44MB 3.5" floppy disk drive. The bright 640 x 480 display reproduces up to sixteen level of grayscale. The non-glare screen tilts through a full 135

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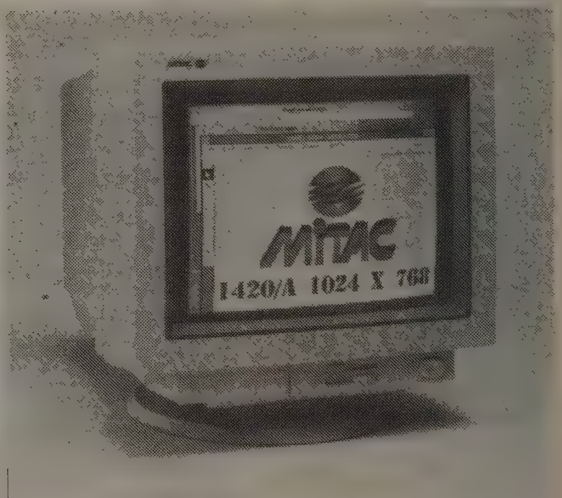
SAMSUNG 7 LB. 386SX NOTEBOOK

Samsung enters the notebook computer market with its NoteMaster 386S/16. The NoteMaster includes a 20MB Conner Peripherals hard disk drive and LapLink III software. In addition, a new chip set from Chips and Technologies offers users a high quality VGA graphics display. Other features include a 1.44MB floppy drive, 1MB RAM expandable to 5MB, and external ports for a mouse, numeric keypad, and external VGA monitor. A 387SX coprocessor slot is located externally for easy installation. Available options include a PS/2 compatible mouse, an internal modem, and a cigarette lighter adapter. ($4,499) Samsung Information Systems America, Inc., 3655 N. First St., San Jose, CA 95134. 1-800-446-0262.

MITAC DEVELOPS POWER NOTEBOOKS

MiTAC's two notebooks, the 3025D and 3026D, weigh only 7.5 lbs. respectively. Driven by a 16MHz 386SX, both notebook computers contain an optional 20MB or 40MB hard disk drive and a 1.44 3.5" floppy disk drive. Each D notebook supports VGA graphics to match its built-in black and white LCD 640 x 480 resolution screen. Also standard in both notebooks is 1MB RAM, 640K for addressing DOS, and 384K for shadow RAM. ($4,299 for the 3025D and $4,499 for the 3026D) American MiTAC Corp., 410 E. Plumeria Dr., San Jose, CA 95134. (408)432-



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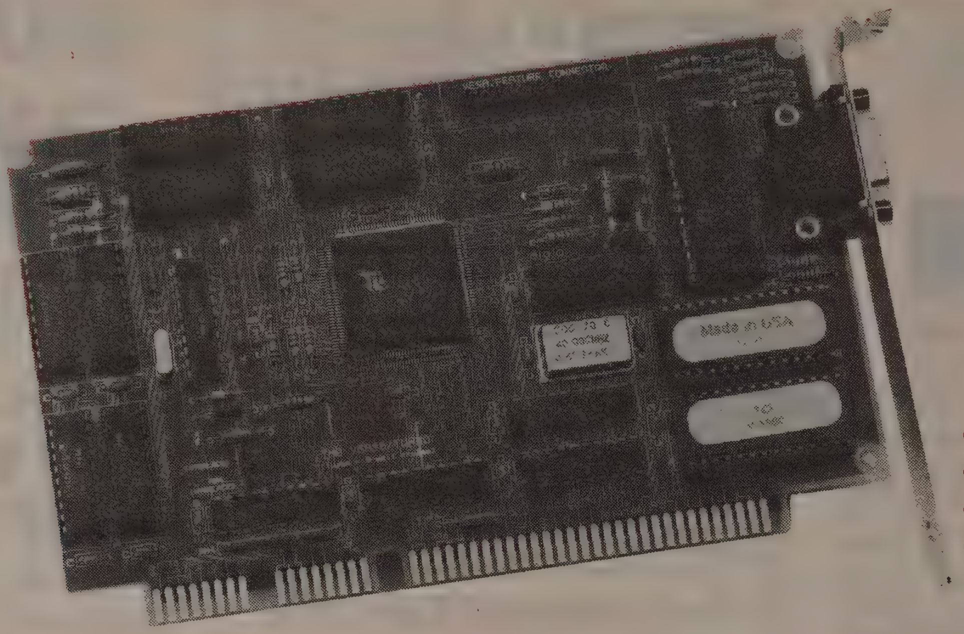

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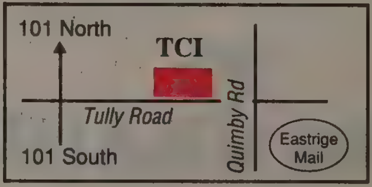

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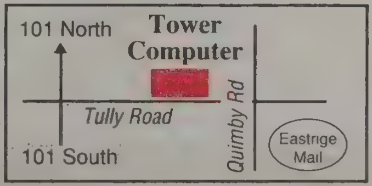

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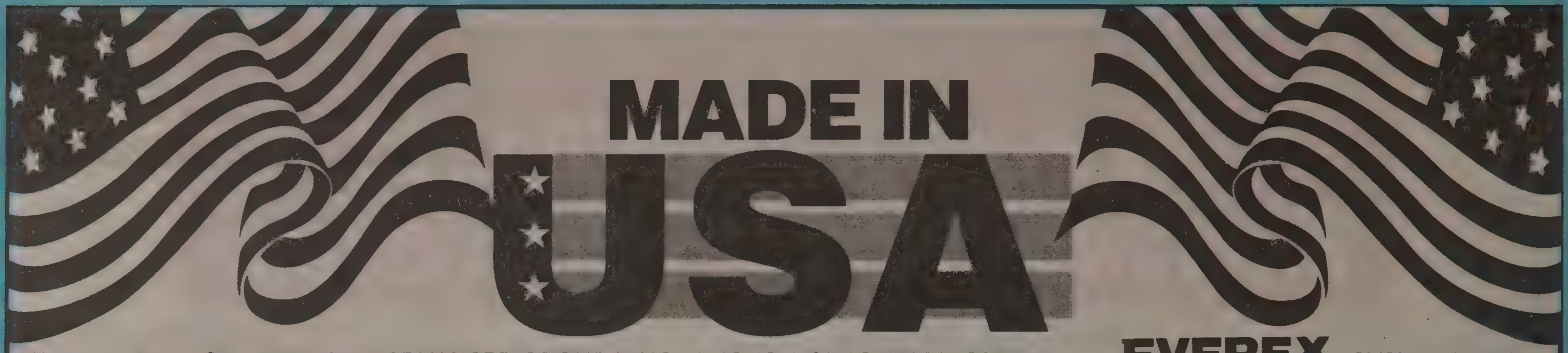

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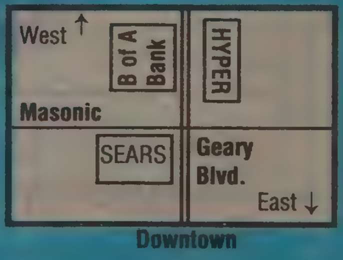

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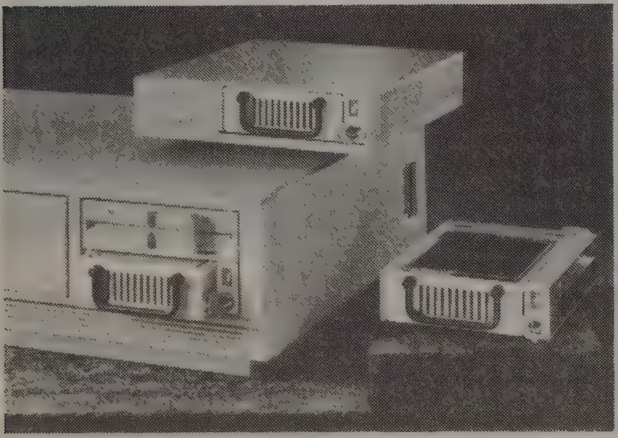
The Data Express is a removable media, data storage enclosure that fits into a 5.25" half height disk drive slot or standalone expansion chassis of a PC, workstation or VMEbus system. As a transportable data storage device, the Data Express offers significant value to the computer user. In security-sensitive applications, it enables data to be removed and locked-up during non-working hours. It also provides a means for data collected at remote locations to be transported to a central location for processing and interpretation. ($315) Kingston Technology Corp., 3023 S. Harbor Blvd., Santa Ana, CA 92704. (714)545-6887.



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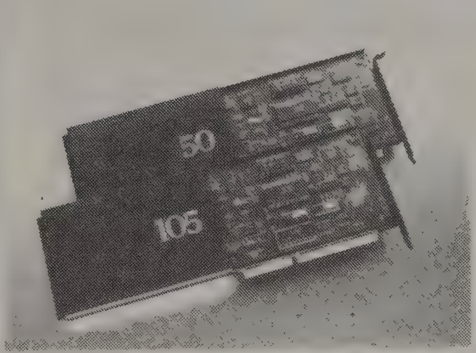

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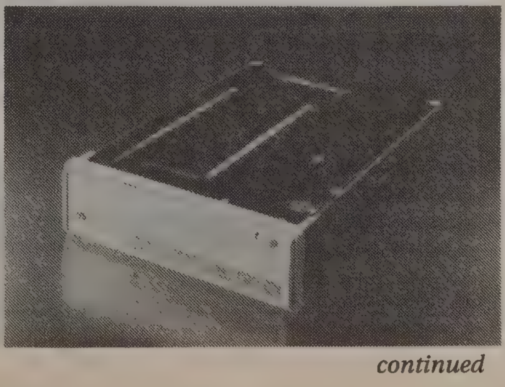

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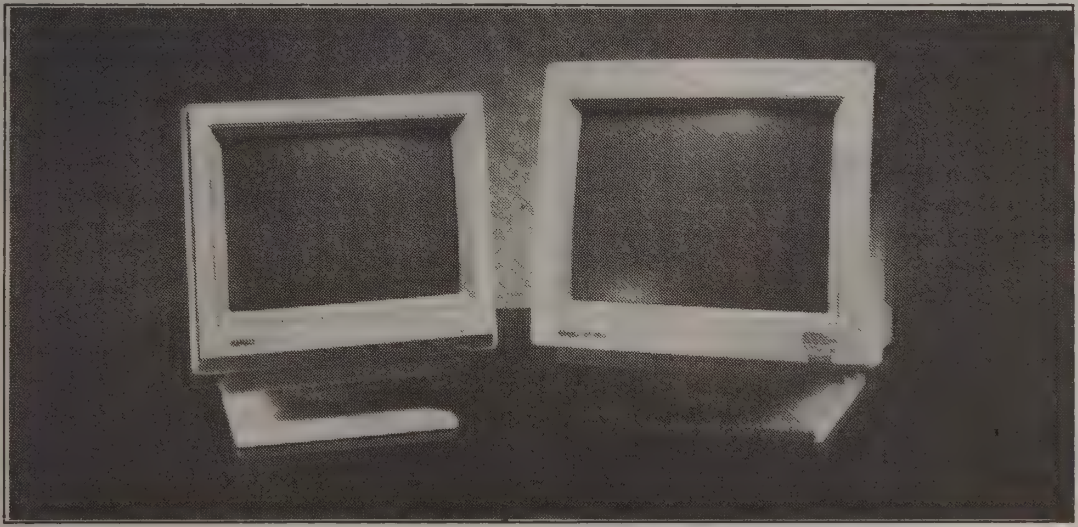

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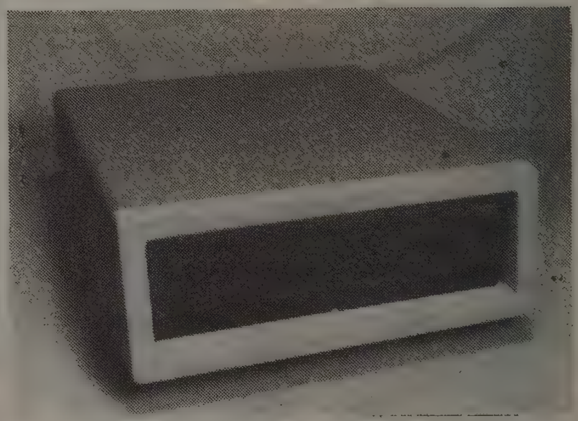

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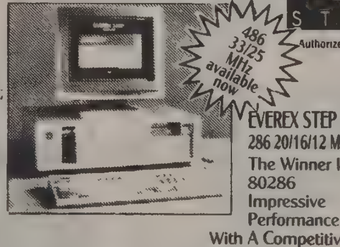

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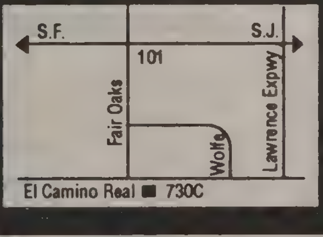

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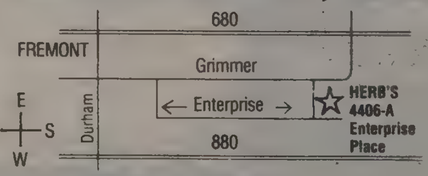

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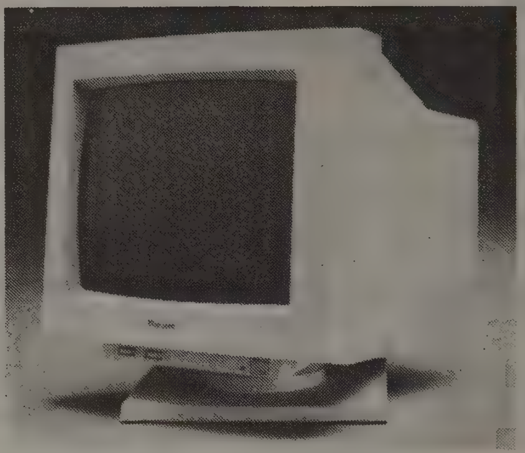
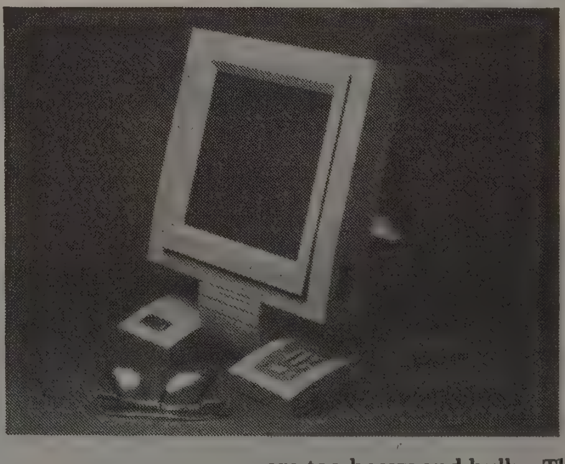
MONITORS



RELISYS SUPER VGA COLOR TRI-MODE MONITOR

The new Relisys 14" Super VGA Color Tri-Mode Monitor is designed for all IBM PC and compatible systems. The Model RE9514 is an analog monitor with resolutions of 1024 x 768 interlaced and 800 x 640 x 480 non-interlaced. It provides a 0.28 mm dot pitch display of unlimited colors on a non-glare screen with geometric distortion held to better than 1.5%. Combined with high resolution, these features allow the latest graphics programs to be displayed with outstanding clarity in vivid colors. In addition, it provides many ergonomic features, such as a cabinet with tilt-and-swivel for optimum viewing and a "shallow-draft" silhouette for users with limited desktop space. ($695) Relisys, Inc., 320 S. Milpitas Blvd., Milpitas, CA 95035. (408)945-9000.

MONITORS IN FOCUS



In Focus Systems introduced a lightweight, full-color monitor using its proprietary color LCD technology called passive-matrix. Light from an outside source passes through the pixels of three panels that are stacked in various combinations and can display close to 5,000 colors. It is compatible with PC and Macintosh systems, or can be integrated into industrial and medical applications where traditional CRT monitors are too heavy and bulky. The monitors weigh approximately 6 lbs. and are designed to be two or three inches in depth, based on customer's requirements. (Prices

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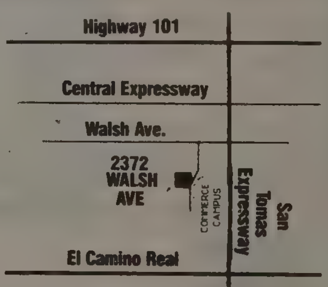

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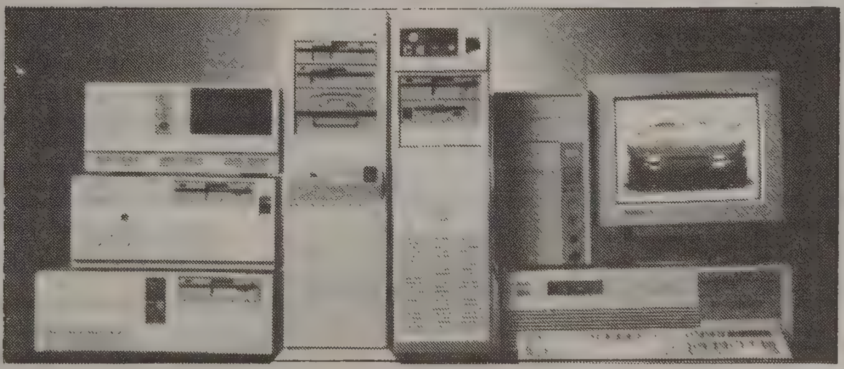

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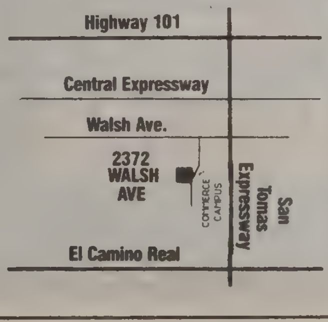
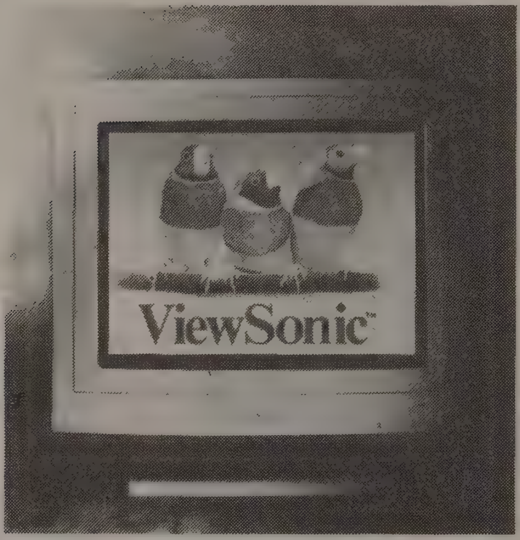


range from $1,400 to $2,500) In Focus Systems, Inc., 7770 S.W. Mohawk St., Tualatin, OR 97062. 1-800-327-7231.



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The ViewSonic 5 offers sharp 1024 x 768 image resolution with 0.2 mm dot pitch. This 14" high-resolution screen displays infinite analog colors with auto-scanning and presetting features. Accurate proportions and minimal misconvergence, sharpening the image, are due in part to the Trinitron CRT and gun. Its linear tracking circuitry automatically scans all horizontal frequencies between 31KHz and 55KHz. The advantage of the ViewSonic 5 flicker-free viewing is that all lines are refreshed at the same time. This monitor works with any IBM-compatible, Mac II or Sony C1304 environment. ($999) ViewSonic, Inc., 12130 Mora Dr., Santa Fe Springs, CA 90670. (213)946-0711.

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The MiTAC M1420 monitor supports a wide range of system compatibles, including VGA, Super VGA, 8514/A, and Mac II. Offering 1024 x 768 resolution, this new monitor is ideal for CAD, DTP, and other uses where high resolution graphics are essential. Providing a 0.28 mm dot pitch to ensure sharpness of both graphics and text, and operating at a 45MHz bandwidth to maintain a stable and steady picture, the MiTAC M1420 offers performance rivaling the 13" NEC MultiSync 3D and Nanao FlexScan 9060S. ($695) American MiTAC Corp., 410 E. Plumeria Dr., San Jose, CA 95134. (408)432-1160.

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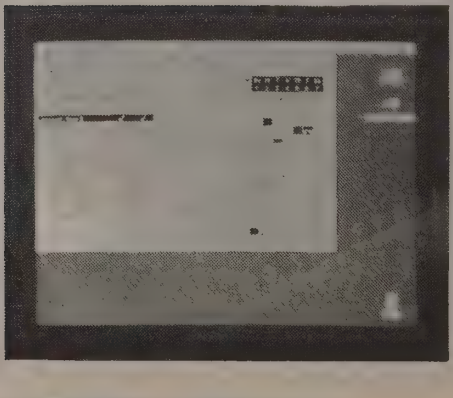
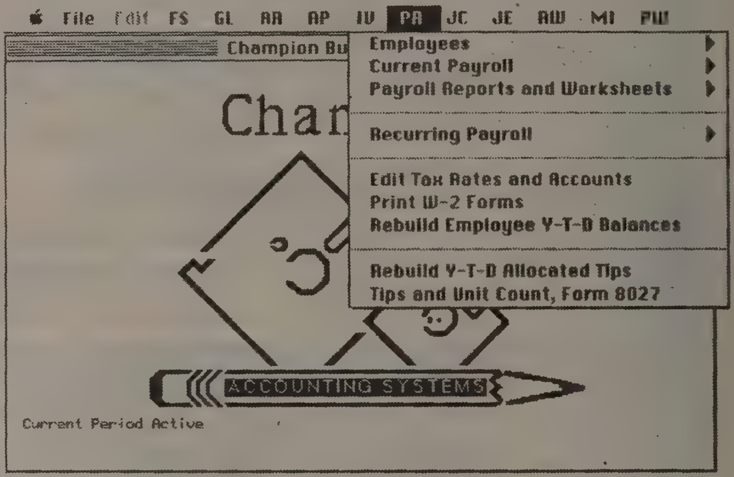


MacLAW is an office management software program for attorneys. It assists attorneys in increasing office productivity while reducing operational and other office expenses by tracking schedules, billing, mail, and clients. MacLAW's real-time relational database allows attorneys, paralegals, staff, and secretaries to easily and quickly make changes that will be reflected throughout the system in seconds. Billing is accomplished as the work is performed, allowing for tracking of an attorney's time. Phone calls are also logged as they are made and billed automatically, and file notes can be made during the conversation. Manhattan Software, Inc., 865 Manhattan Beach Blvd., Suite 204, Manhattan Beach, CA 90266. (213)545-6462.

CHAMPION BUSINESS SYSTEMS FOR THE MAC

Champion Business Systems has introduced a new version of its Champion Accounting Software for the Macintosh. It was developed to allow users familiar with Champion on other platforms to easily migrate to the Macintosh version. Macintosh Champion offers easy, menu-driven transacting, real-time versus batch processing, context-specific help, and online lookup windows. It operates on the Mac Plus, SE, SE/30, and the Macintosh II family. ($450 each module) Champion Business Systems, 17301 W. Colfax Ave., Suite 250, Golden, CA 80401-0008. 1-800-243-2626.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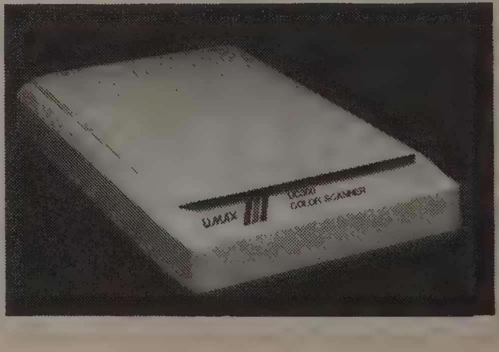

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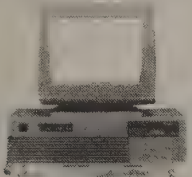

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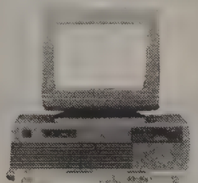

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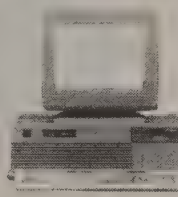

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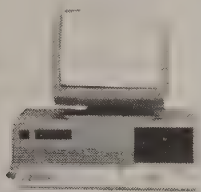

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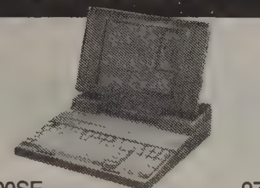

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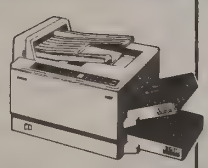

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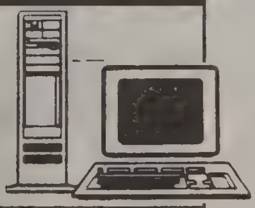

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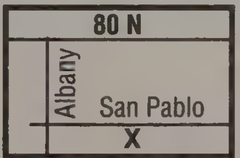

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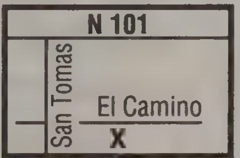

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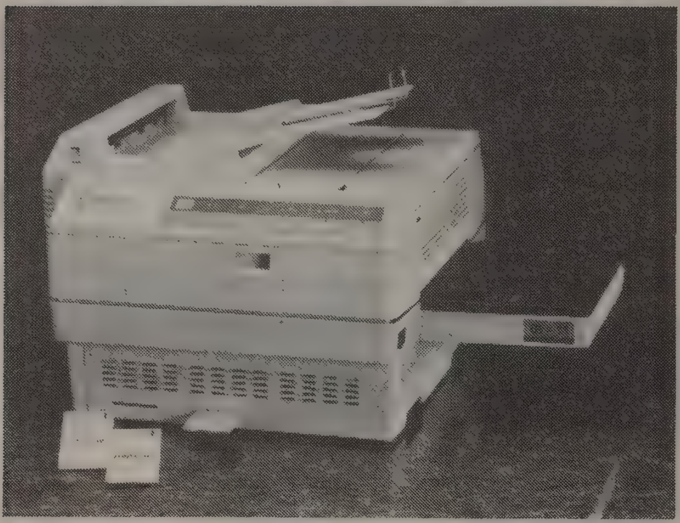
images. The UC3000 is based on the same scanning technology as its high performance grayscale scanner, the UG80. The UC3000 connects to a Macintosh through a built-in SCSI interface. It also has SCSI host adapters for the IBM pc XT bus and PS/2 MCA systems. Color image editing software, Picture Publisher Plus, is bundled for PC users and Photoshop for Macintosh users. ($2,495) UMAX, Inc., 2352 Walsh Ave., Santa Clara, CA 95051. 1-800-652-0311.



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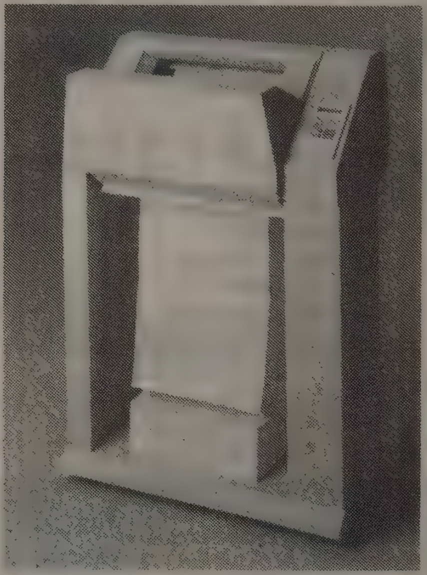

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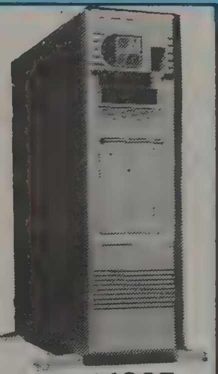

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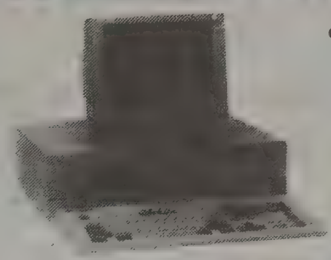

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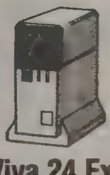

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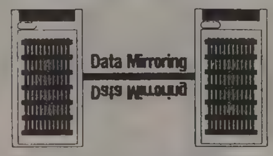

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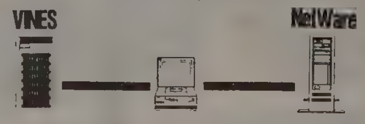

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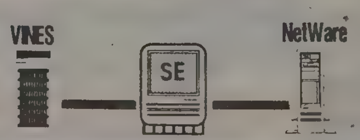

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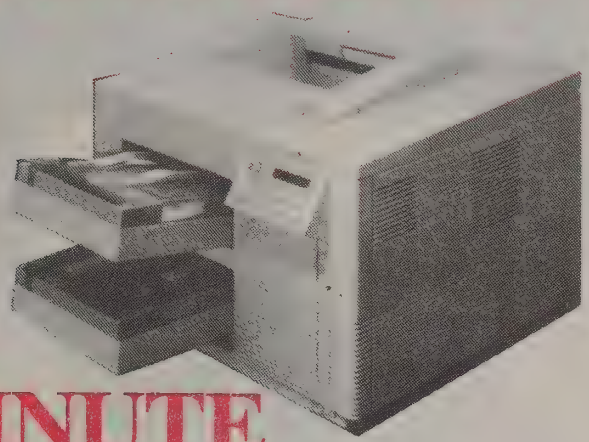

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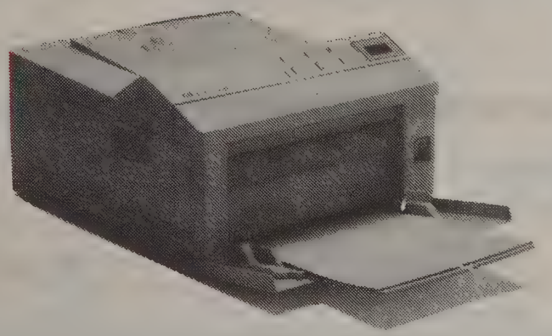

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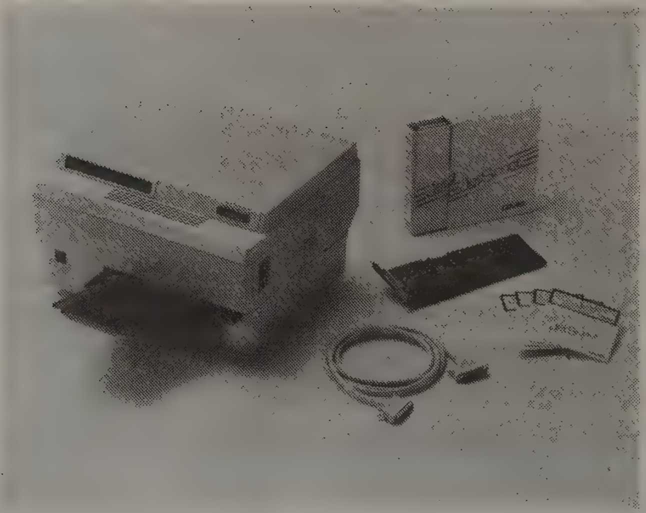

PRINTER WORKS POSTSCRIPT PRINTER

The JetScript-CX printer uses a PC-resident controller card from QMS and an 8 ppm laser printer from Canon. The JetScript controller card from QMS is designed to work with IBM PC XT/ATs and compatibles and includes 3MB RAM, a Motorola 6800 processor running at 16MHz, a printer cable and an Adobe PostScript interpreter with 35 scaleable fonts. The QMS JetScript controller was originally designed to give PostScript capability to the HP LaserJet II printer. By combining the controller with the Canon engine, Printer Works can offer a fast, genuine Adobe PostScript laser printer with high quality and low price. ($1295) Printer Works, Inc., 3481 Arden Rd., Hayward, CA 94545. (415)887-6116.

MACINTOSH SOFTWARE

MOSAIC FOR MACINTOSH

Shipping in late March, Insight Development's Mosaic For Macintosh is a software package that allows Macintosh users on a Novell NetWare network to print documents from any Mac application on HP LaserJet and DeskJet printers. It preserves investment in existing equipment, allowing Macs to use both PostScript and PCL-based printers common on PC and mixed-platform networks. For information, contact Insight Development Corporation, 2200 Powell St., Suite 500, Emeryville, CA 94608, (415)652-4115, fax (415)652-9857.

WORDPERFECT 2.0 FOR MACINTOSH

Long a standard in the PC world, WordPerfect found only limited acceptance in its first Macintosh version. The all-new 2.0, now shipping, is the result of a major effort and reflects the suggestions of Mac users. It includes many new features from text/graphics integration to macro capability, and can exchange files with WordPerfect 5.0 and 5.1 on other platforms. For more information, call WordPerfect's Information Services Department at (801)225-5000.

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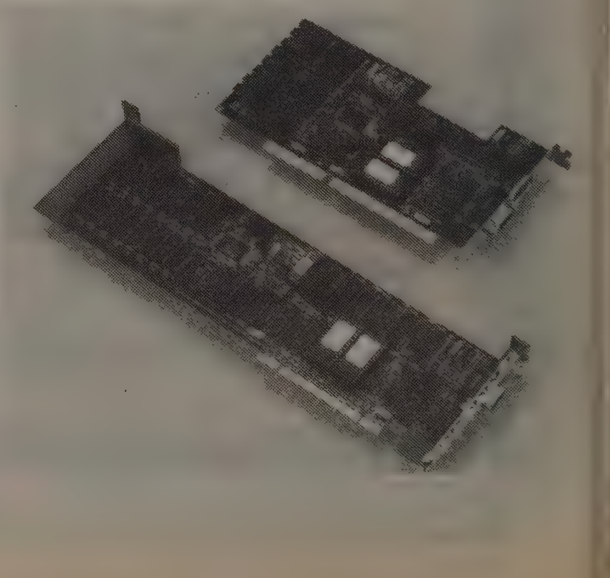

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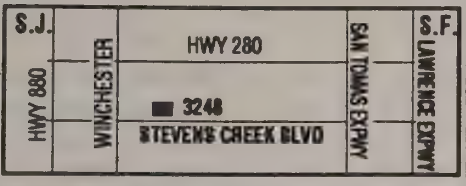

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WD 1007 SE2 ESDI	172
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DTC 6280 ESDI 1:1	152
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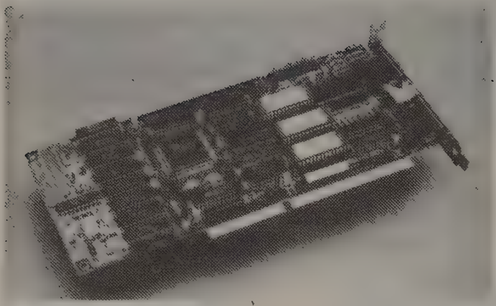

The new VGA adapter from Definicon International generates resolutions of up to 1021 x 768 pixels and up to 256 colors, and supports both interlaced and non-interlaced monitors in all modes of operation. The HiRes 1024 VGA adapter supports the full range of colors and resolutions of standard VGA. It has extended text modes of up to 132 columns and sixty rows, supporting up to sixteen colors. Display is flicker-free in all modes, is compatible with all monitor technologies, and with ISA and EISA buses. Definicon International, Inc., 181B W. Orangethorpe, Placentia, CA 92670. (714)961-0438.

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The VCR Backup board is a plug-in card for IBM and compatible computers that allows you to back up your hard disk on a standard VCR tape. This board gives you up to 100MB of data backup on a two hour tape. The half-sized card has connections for video in and out, and a cable is provided that connects to any standard VCR. Additionally, an infrared controller is provided which plugs into the VCR backup board and gives your computer full control of the VCR. The method used to record the data on the VCR tapes is reliable and each packet of data is recorded on the tape at least four times for extra security. ($229) Omnitronix, Inc., 760 Harrison St., Seattle, WA 98109. (206)624-4985.

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SIMMply-RAM for the PS/2-32 is a 32-bit Micro Channel memory expansion board that can be used to provide up to 32MB of additional memory for use in OS/2, NetWare, and UNIX fileserver applications. The new board can also supply added memory for Windows and other DOS-based applications. SIMMply-RAM for the PS/2-32 features automatic, switchless installation that is accomplished using a self-booting installation diskette and the Programmable Option Select feature of the Micro Channel. The SIMMply-RAM for the PS/2-32 memory manager provides support for LIM 4.0, and Microsoft's XMS, VCPI, VDS, and Windows 3.0 386 Enhanced mode. ($499) Acculogic, Inc., 18023 E. Skypark Circle, Irvine, CA 92714. 1-800-234-7811.

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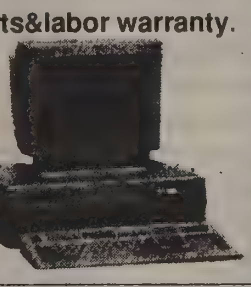

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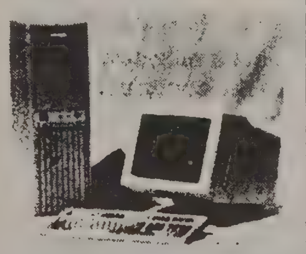

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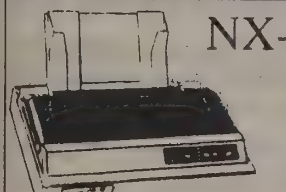

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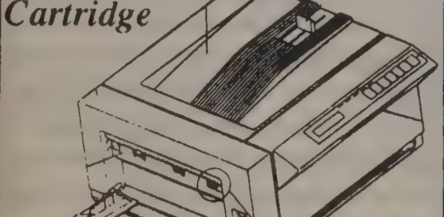

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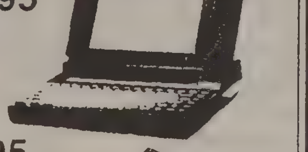

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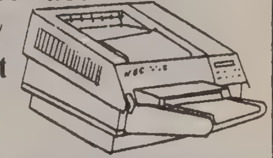

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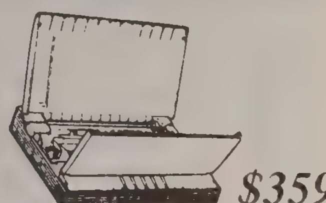

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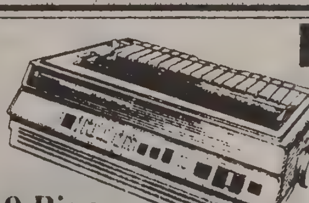

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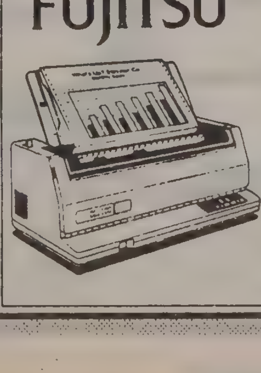

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Continued from page 32

code, unauthorized copies of copyrighted materials, etc.? What about person-to-person transfer of digitized pornographic images? (What about coin-operated copiers in libraries filled with copyrighted publications?)

Content liability: What responsibilities—or liabilities—should a service provider have for content of information transmitted through or posted on their system? Should a private individual operating a volunteer BBS be treated differently—better or worse—than a large, wealthy corporation?

Who pays? What's the difference if the receiver of email pays part or all of its cost—for instance, electronic advertisers paying for electronic "business reply cards"? How about email users who pay storage and connect-time costs? This is also the "junk fax" issue, where the receiver furnishes the paper.

Individual or corporation? Should the rules—or law—be any different when the recipient (or sender) is an individual, than when the recipient (or sender) is a company? What if it's a nonprofit corporation? What about a church, which is a nonprofit corporation?

Unwanted ads: What if the recipient doesn't want to receive the materials being transmitted? How can a potential recipient know—or identify—what they do and do not want to receive? How can the sender know? Should paid advertisements be the only unsolicited transmissions that are permitted—as is the case with newspapers and junkmail? What if one party is a zealous advocate of a cause the other despises?

Political advocacy: What if the unsolicited transmission is for a "cause," rather than "advocating" a product? Traditionally, "political speech" has been much more protected than "commercial speech." Many folks are infuriated by unwanted political mail and calls.

No doubt, many were equally irritated when Paul Revere dared to awaken them with his unsolicited call to arms.

These just scratch the surface of essential questions we must resolve as we build communication bridges—and toll roads—in the electronic frontier.

PROBLEMS & SOLUTIONS

I recently received a Variation on the Theme of Junk Fax: An unsolicited, unwanted marketing fax arrived with the opening line saying, "Thank you for giving me the opportunity to discuss [their unwanted junk]." The statement implied that we had discussed their products and this junk fax was merely a follow-up. Irritatingly sneaky way of circumventing possible statutes prohibiting such junk mail. Said irritation guaranteed product avoidance.

While mentioning direct-marketing technology—here's guerrilla warfare against computerized phone hustles: When you receive one, turn on a nearby sound source (radio, TV, etc.) and place the phone next to it. The sound will keep their recorder—and phone bill—running for a maximum time and expense. If enough of us make it sufficiently costly, then maybe the nuisance will go away. Technology often offers solutions to its problems.

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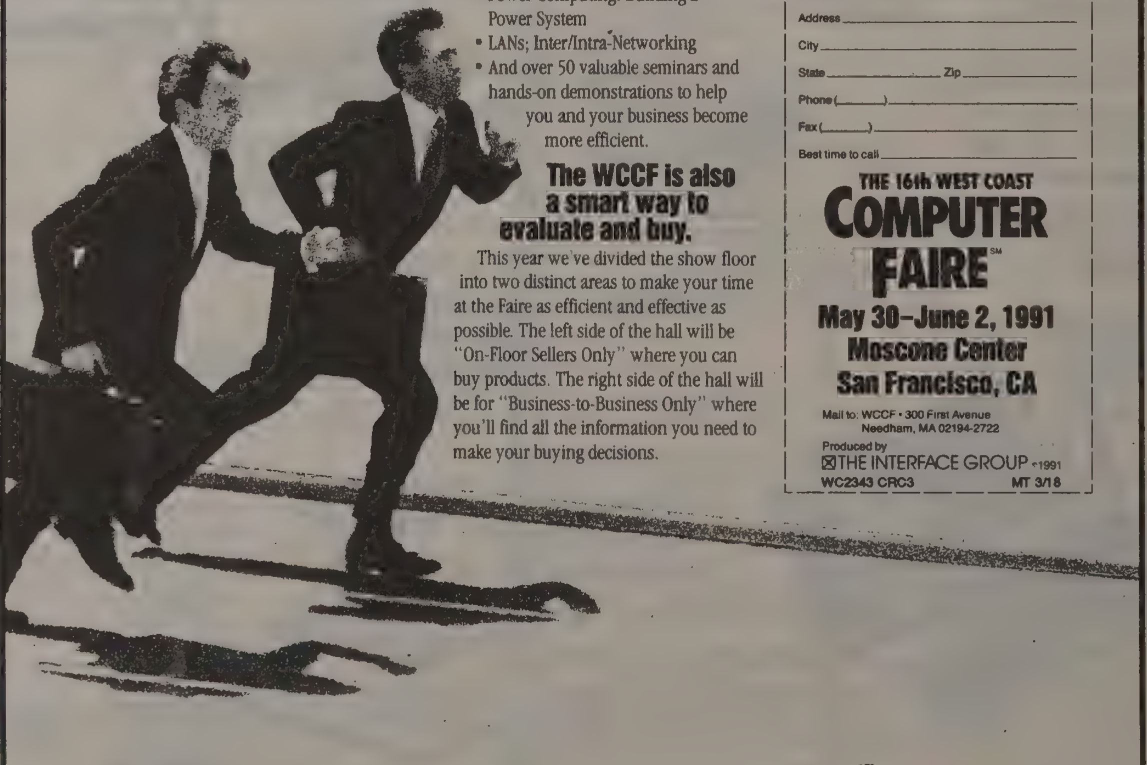

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- LANs; Inter/Intra-Networking
- And over 50 valuable seminars and hands-on demonstrations to help you and your business become more efficient.

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This year we've divided the show floor into two distinct areas to make your time at the Faire as efficient and effective as possible. The left side of the hall will be "On-Floor Sellers Only" where you can buy products. The right side of the hall will be for "Business-to-Business Only" where you'll find all the information you need to make your buying decisions.

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◇ **Memory**—2 MB standard; expandable to 32 MB on Board, maximum expandability to 64 MB

◇ **HARD DISK**—WD 200 MB Hard Disk 18ms

◇ **Cache**—8K 4 way set-associative on-chip internal cache

◇ **Monitor**—Super VGA 1024x768 resolution

◇ **Video Card**—Super VGA 1024x768 16-Bit Card

◇ **Coprocessor**—Contains on-chip floating-point mathematics unit

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Two serial, one parallel ports
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◇ **Benchmarks**—Landmark (v1.14): 114.1
Norton SI (v4.5): 39.0
Power Meter (v1.2): 10.948 MIPS

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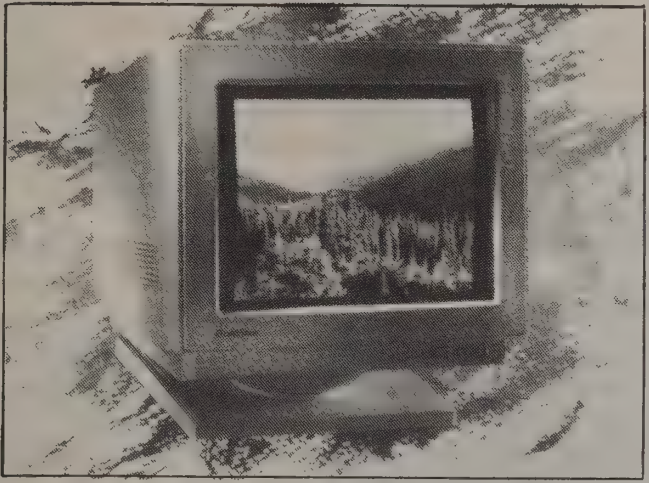

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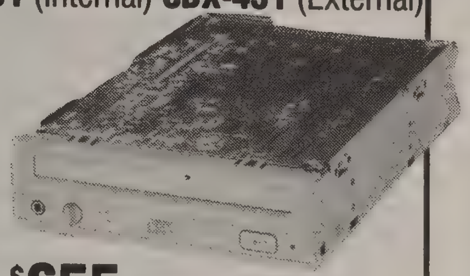

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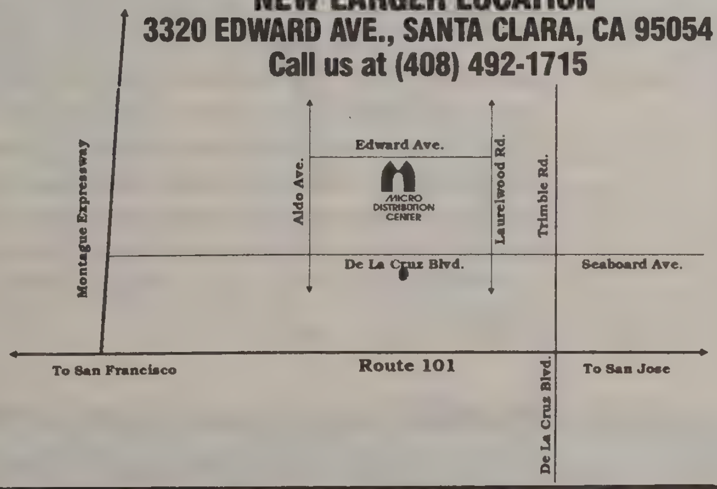
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Continued from page 102

I went down with my computer under my arm, and discovered another benefit. They could have the job done in a day, and they would deliver. No, this is not an ad for MicroAge—it is just that good service is so rare that it deserves to be noted when you get it. I got it and I was pleased. And I thought I was done.

CONFIGURATION HELL

Before I took the computer to MicroAge, I had pulled all my boards. I took the fax board, the I/O board, the Microsoft bus mouse board and the modem out. And I bought a new I/O board. I did not take those boards with me to MicroAge. By my neglect I cast myself into the Valley of the Interrupt, whence few come unharrowed.

The problem was that boards appear in the mind of the motherboard via addresses in memory. These cannot be shared, so you must assign a unique one to each board. They must also be assigned an "interrupt," which is a license to tug on the skirt of the motherboard and demand the CPU's attention. If they are I/O devices, they may be assigned to a serial or parallel port. Ports may appear at the back of the computer, as a printer port usually does, or they may be on an add-in board such as an internal modem.

You would think that a computer would be well-employed figuring out interrupts, ports and addresses for itself, right? Yes, it would, but it doesn't happen. You have to do it. And to help confuse you, there are unintelligible switches and jumpers that vary from board to board. With those frequently unlabeled objects you must set your assignments on the hardware. The documentation for these boards is usually written by someone who writes English about as well as I would write documentation in Malay. You know what topic they're discussing, but that's all.

So you end up turning off the computer, taking out a board, setting the switches one way, reinstalling the board, turning on the computer, trying the program, swearing, and turning off the computer in a tedious loop. Sometimes you get the laptop transfer cabled to the serial port and working, and maybe even the modem, but the printer won't go. Then to make the printer go, you lose the modem. And you find you forgot to note down the last setting that worked, so you're back in the loop again.

If you have someone else build your system, for heaven's sake take along everything you want to use with it, and ask them to check it out. Pay them cheerfully. Trust me on this one.

To the degree I got it working, I did it with the help of Quarterdeck's Manifest ($59.95). This is a program that tells you just about everything about your system while it is running. It tells you about standard, high, extended and expanded memory, the Basic Input/Output System (which is abbreviated BIOS), about the environment and its variables, about adapters and interrupts—and it tells you in usable form. It's an amazing product, and it is only part of what you get with Quarterdeck's mainline product, DESQview. More about that in a moment.

MEMORY

With the hardware switches set, I wanted access to all the new memory.

"Wait," you would say, "You just bought four megabytes!" Yes I did, but of course it was not a simple thing to get it working.

The 386 chip greets the ordinary DOS program by reproducing the kind of environment for which DOS programs were originally written—the original IBM PC, with all its limitations. In this "real" mode it presents the program with 640K of memory to share with DOS.

You would think that a computer would be well-employed figuring out interrupts, ports and addresses for itself, right? Yes, it would, but it doesn't happen. You have to do it. And to help confuse you, there are unintelligible switches and jumpers that vary from board to board.

Quarterdeck has solved this and many other problems with a single bundle of programs, called DESQview 386 ($219.90 list). Quarterdeck has been making versions of DESQview for years, and I've been using them to make each successive machine I have owned do more than the hardware makers could have dreamed.

One part of DESQview 386 is Quarterdeck's Memory Manager, QEMM386. It is a native 386 program, capable of using all the memory that the 386 has. It then allots those megabytes to your programs. QEMM386 manages Expanded Memory for you so that in many cases your programs are swapped out, still running, into expanded memory.

DESQview has always been a multitasking program: It allows you to run many programs at the same time. They all share the Central Processing Unit's time, taking turns to do a bit of their chore before releasing the processor to the next program in the ring. It is a favorite irony that Windows 3—an almost-multitasking program—runs comfortably inside of a window in the fully multitasking DESQview.

As soon as I got the 386, therefore, I also acquired DESQview 386 and installed it. I discovered that there were a set of new tricks built into the 386 version of DESQview. For one thing, it is now capable of loading much of itself out of the 640K that DOS and your program must share. It can also load drivers and buffers into high memory. The result is that many programs have more breathing room, even in their little DOS windows.

Finally, DESQview 386 is an educator. To fully use the 386 you must someday take the plunge and learn something about the architecture and even the history of the machine. The DESQview manuals are very clearly written, without sacrificing informativeness. If you use them with Manifest, you will gradually learn a lot about your machine, moving step by step to mavenhood. You will also be able to tweak your machine for better and better performance, and that (after all) is why you bought a 386 in the first place.

THE MORAL

With DESQview installed, I had at last a fully functioning 386 computer. I had learned more than I wanted to about the mechanics of my machine; met one unfortunate vendor and several excellent ones; and renewed my appreciation of Quarterdeck's DESQview family of products. And I had learned what I should have known (may you profit by my experience): "Changing hardware is not the work of a morning." ■

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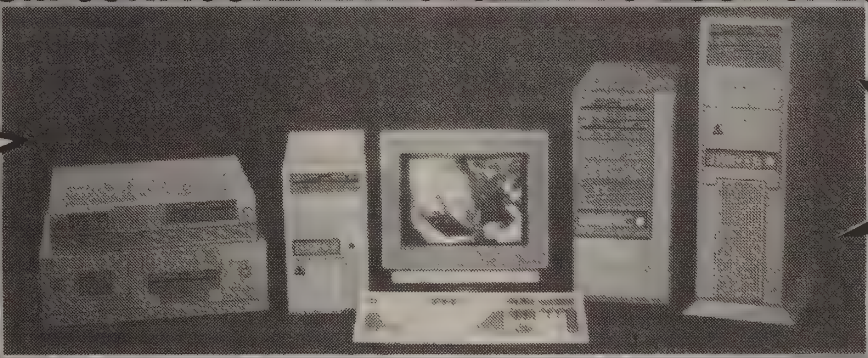

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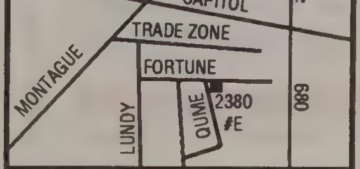

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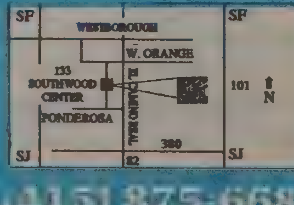

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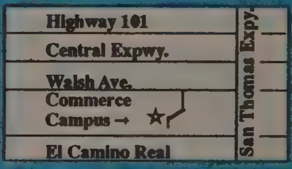

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CREATIVE TOOLS

Using Hijaak For Graphics Connectivity

PC-To-PC And Mac-To-PC Conversions With Hijaak

BY LENNY BAILES

Only two years ago it was an arcane chore to transfer graphics between two PC applications. If you drew or scanned in one program, there were no guarantees that another program would accept the files. Until last year, there was no workable solution for translating CAD diagrams or other vector-format designs.

Things are different today. The drawing program you use will probably write files in multiple formats. The word processing and publishing programs all read the more common graphics formats.

WHY HIJAAK?

Hijaak, from Inset Systems, was one of the early third-party solutions for converting bitmapped (Paint Program) images. With the current generation of PC software, you might wonder whether you still need something like Hijaak. After all, if you work under Windows, you can choose a designer package with built-in import/export filters. You may read and write AutoCAD, Encapsulated PostScript, or Macintosh PICT II files directly in your application.

Inset Systems has kept the new version of Hijaak competitive by loading it with image-enhancement features, and even more format conversion options.

As a business tool, Hijaak supports nineteen different fax packages. You can fax output from any HP LaserJet compatible application by printing to disk. Hijaak converts the PCL output to the appropriate fax specification. You can reverse the process by translating the input files from your fax modem to an appropriate format for your publishing software.

Technical writers may make use of Hijaak's pop-up screen capture utility. The screens can be saved directly to any supported file format, or stored in the Hijaak internal format. Screens can be captured in any resolution up to 16 color, 640x480 VGA. This version now includes a pop-up task manager. After you grab the current screen from an application, you can toggle between file conversion or a user-designated editing program.

Hijaak has specially tuned conversion filters for users who must deal with a variety of applications, Generic formats like GEM, CGM and TIFF are subdivided by "flavor" for individual applications. The CGM files produced for CorelDRAW are slightly different from those written for Arts & Letters or PageMaker.

Hijaak provides an impressive set of image-enhancement tools for handling scanned images from many sources. You can regulate the height, width and aspect ratio for the target file, adjust brightness and contrast, or apply anti-aliasing to eliminate the jaggies. Grayscale or 256-color information can be preserved or mapped to fewer colors. Resolution (in dots per inch) and screen frequency (in lines per inch) can be adjusted to vary the gray-level information.

One useful equation I discovered from the manual: # of gray levels=([Dots per inch/ Screen Frequency]2.) If you are going to dither a 256-color image for a 300 dpi printer, a screen frequency of 60 produces 25 simulated gray levels.

For vector format files, Hijaak has a filter for smooth or coarse curve translation. When you go from a "rich" format to a simpler one, you can save disk space and conversion time by choosing "coarse" translation. Hijaak's manual includes a tutorial which explains this in detail.

Some vector formats allow Hijaak to use a unique font mapping feature. Font information is not simply converted into bezier curves and rectangles; the text attributes are preserved. When the file is converted to the destination format, the target application can still edit the text. Font mapping also yields smaller output files than would result from text as bezier curves.

Hijaak has specially tuned conversion filters for users who must deal with a variety of applications, Generic formats like GEM, CGM and TIFF are subdivided by "flavor" for individual applications.

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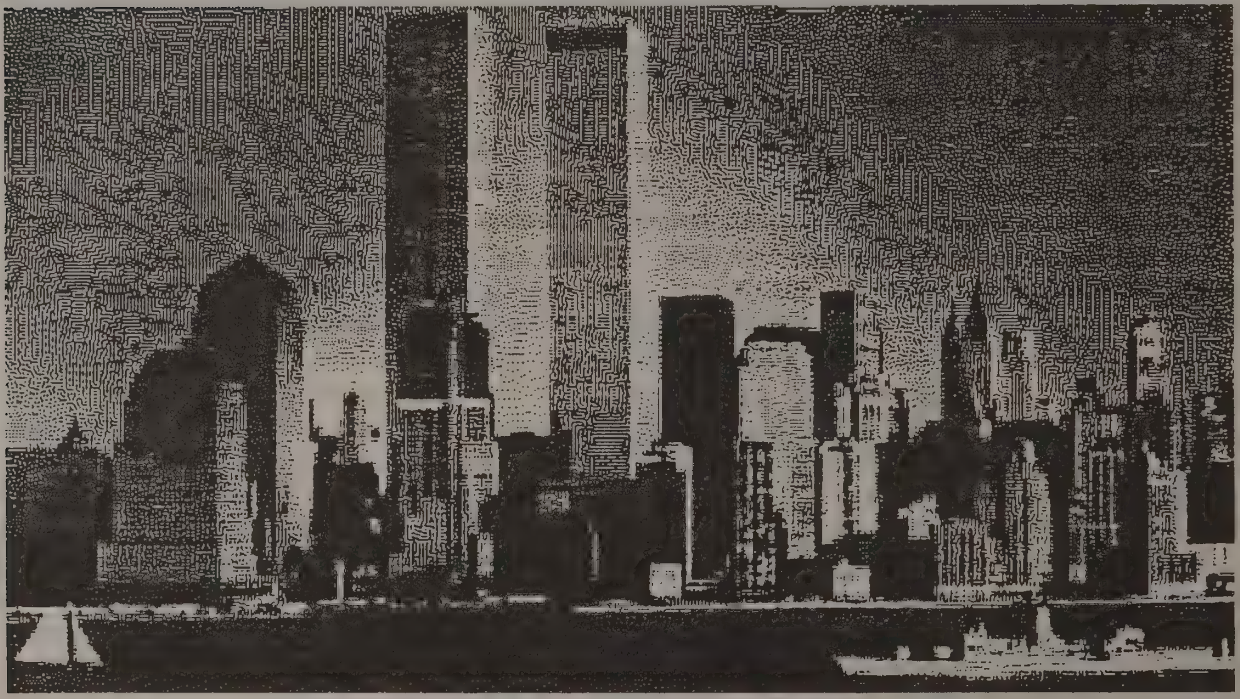
HOW WELL DOES IT WORK?

Screen Capture: Hijaak's screen capture works with most text- and graphics-based applications. (A separate standalone program is supplied for use with Microsoft Windows.)

I was disappointed by the 16-color, 640x480 limitation on captured screens.

I was not able to use the capture utility to grab DESQview menu screens. Hijaak v.1 used to get along with DESQview. Of course, in Hijaak v.1, you couldn't save screens directly to specified file formats or pop up additional programs. The new Hijaak task switcher should be useful enough, except to people writing books about DESQview.



Bitmap Conversions: I tested Hijaak with several 256-color CompuServe GIF files. All of the color or grayscale information came through accurately for conversions to PC Paintbrush (.PCX), Microsoft Windows (.BMP), and TIFF (Aldus's Tagged Image File Format). For use with WordPerfect, I had to use the two-color and four-color dither options to make .WPG files. There are over fifty other file formats supported in the package.

I printed the TIFF files with Ventura Publisher on the PC and PageMaker on the Mac. The gray-level information was preserved on the LaserWriter, and simulated well on the LaserJet II.

Vector Conversions: I compared Hijaak's translation of several GEM and CGM files with the export filter in CorelDRAW v.2. The results generated from both programs were identical. (Note: Hijaak has no tracing feature; to wind up with a vector format, you have to start with a vector format. Either Hijaak or CorelDRAW can convert a vector file to a bitmap.)

Hijaak does not support the native format for Micrografx Designer, but it can handle Designer vector graphics saved as Windows Metafiles (WMF).

For the Macintosh PICT format, CorelDRAW and Hijaak complement each other. Like Jack Spratt and his wife, Hijaak accepts only PICT bitmaps, CorelDRAW, only PICT objects. Between the two of them, you can reconstruct a complex SuperPaint or MacDraw document. The tech support people at Inset Systems report that the next version of Hijaak will support PICT2 vector files.

SUMMARY

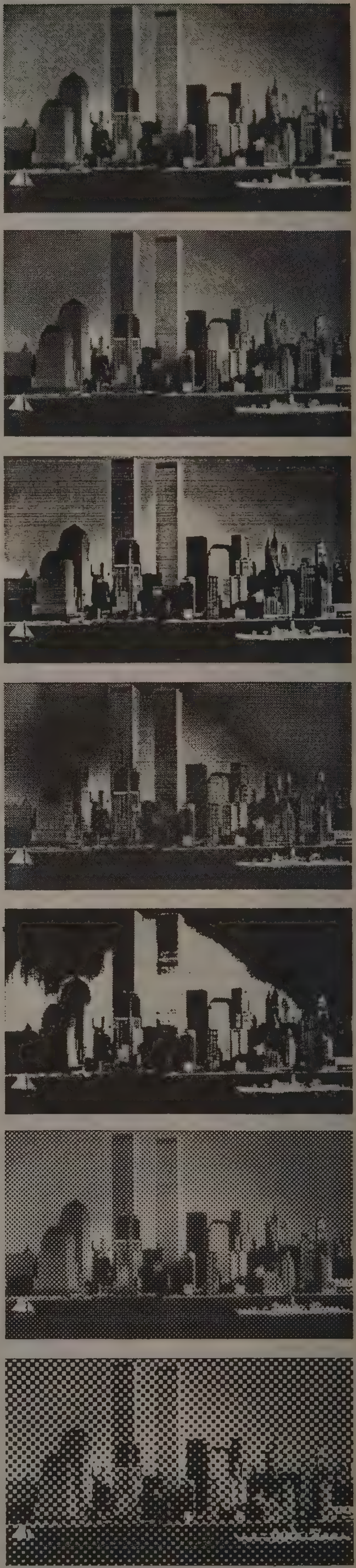
Hijaak provides comprehensive support for owners of fax-modems. You can do basic graphic conversions without Hijaak if you already own a sophisticated paint program or drawing program. (Publisher's Paintbrush, Deluxe Paint II: paint; Micrografx Designer, CorelDRAW: draw).

Hijaak complements basic conversion by offering batch processing for multiple images and supporting a huge number of formats. The Hijaak manual provides extensive tutorial material and technical information for each supported format.

Hijaak's included image processing tools are not found in most commercial packages. You should be advised that some of these features can be found in shareware programs available on graphics bulletin board systems. The trend in the PC world has been for the shareware developers to pioneer graphics software, and the commercial developers to debug and market it. ■

RESOURCES:

Hijaak, v.2, $249
Inset Systems
71 Commerce Dr.
Brookfield, CT
06804
800-828-8088



Hijaak goes beyond format conversion to provide a wide range of image-manipulation tools.

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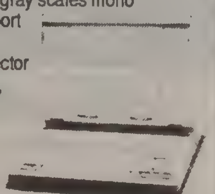

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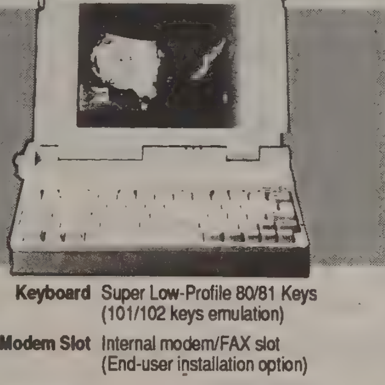

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WITH HARD DRIVE				
80MB - IDE	2,515	2,956	3,045	3,395
100MB - IDE	2,550	2,990	3,180	3,440
200MB, 15ms - IDE	2,865	3,305	3,495	3,745
*338MB, 16ms - ESDI	3,500	3,940	4,130	4,415

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

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100MB - IDE	1,875	2,315	2,485	2,755
200MB, 15ms - IDE	2,190	2,615	2,800	3,070
*338MB, 16ms - ESDI	2,860	3,300	3,470	3,740

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Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" Multiscan 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	1,270	1,545	1,615	1,805
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80MB - IDE	1,660	1,935	2,005	2,195
100MB - IDE	1,695	1,970	2,040	2,230
200MB, 15ms - IDE	2,010	2,285	2,355	2,545

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- MS DOS 3.3 or 4.01 included
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Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	925	1,195	1,265	1,455
WITH HARD DRIVE				
40MB - IDE	1,130	1,400	1,470	1,660
80MB - IDE	1,315	1,585	1,655	1,845
100MB - IDE	1,350	1,620	1,690	1,880
200MB, 15ms - IDE	1,665	1,935	2,005	2,195

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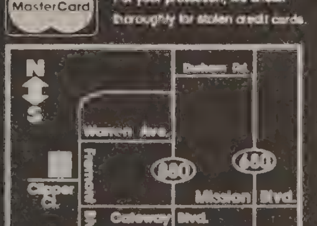

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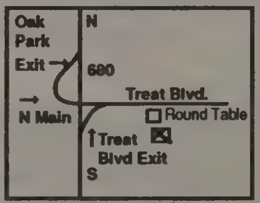

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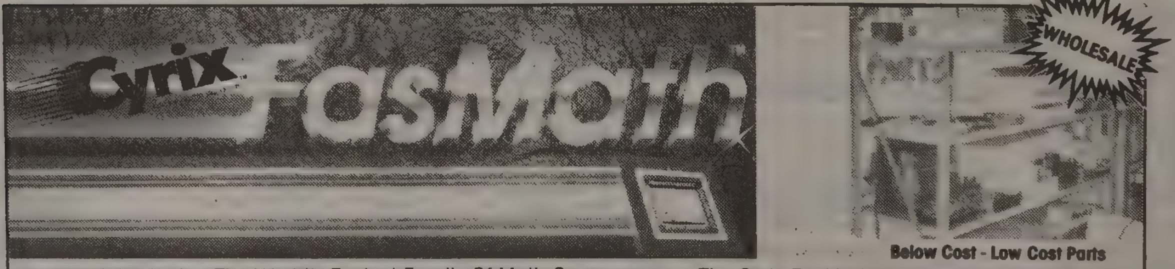

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GLOSSARY OF TERMS

Antialiasing:
When bitmap images are edited or resized, individual lines and edges often take on a jagged appearance. Antialiasing is an algorithmic process which examines a painting and smooths out lines and edges by adding or subtracting pixels.

Aspect ratio:
In most PC graphics modes the pixels which make the display are longer than they are wide. The Macintosh uses square pixels. The ratio of length to width of pixels is called the aspect ratio. An untreated Macpaint file displayed on the PC appears vertically distorted. Hijaak can compensate for this distortion, or the difference between Hercules, EGA and VGA resolutions by readjusting a picture's aspect ratio.

Bitmapped image:
Drawing or picture which is created by turning individual pixels off and on. Bitmaps are processed by programs and printers as an array of dots.

Dither:
Shades of gray can be simulated on a 2-bit (black & white) display or printer by arranging groups of alternately colored pixels. The eye sees properly spaced black and white patterns as grays.

Floyd Steinberg Dithering:
This is a popular dithering algorithm named after its inventor. Hijaak uses the term "Diffusion" for Floyd Steinberg dithering.

Grayscale:
A 4-,8-, or 16-bit display may represent individual pixels in multiple colors or gray levels. PostScript printers reproduce the gray-level information to yield a truer representation of shaded images than possible from dithering.

Halftone:
A special form of pattern-dithering used to represent photographic images.

TIFF:
Tagged Image File Format—a specification for storing graphics files developed jointly by Aldus and Microsoft. TIFF is the richest file format commonly shared by Macs and PCs. Hijaak is written to read most variants of this format from both platforms.

Vector Image:
Drawing or picture which is created as a series of independent screen objects. Programs and printers process these images by dealing with an equation which describes each object.

Source Types and Extensions		Destination Types and Extensions	
Amiga ILBM	IFF	Amiga ILBM	IFF
ASCII Text	TXT	AT&T Group 4	ATT
AT&T Group 4	ATT	AutoCAD DXF*	DXF
AutoCAD DXF	DXF	CALS Raster	CAL
CALS Raster	CAL	CompuServe	GIF
CompuServe	GIF	Fax Type	001
Dr. Halo	CUT	GEM Image	IMG
Fax Type	001	GEM Metafile*	GEM
GEM Image	IMG	HP LaserJet	PCL
GEM Metafile	GEM	Inset Systems	IGF
HP LaserJet	PCL	Inset Systems	PIX
HP Plotter	PGL	KoFax Group 4	KFX
Inset Systems	IGF	Lotus*	PIC
Inset Systems	PIX	MS-Windows	WMF
KoFax Group 4	KFX	MacPaint	MAC
Lotus	PIC	Mac PICT	PCT
MacPaint	MAC	MathCAD*	MCS
Mac PICT	PCT	Metafile*	CGM
MS-Windows	WMF	Microsoft Paint	MSP
Metafile	CGM	PC Paintbrush	PCX
Microsoft Paint	MSP	PM Bitmap	BMP
PC Paintbrush	PCX	PM Metafile*	MET
TIFF	TIF	PostScript	EPS
TARGA	TGA	TARGA	TGA
Tektronix Plot 10	P10	TIFF	TIF
WordPerfect	WPG	WordPerfect	WPG
		*Available only for vector sources.	

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The First Annual MacTrivia Test

Back To 1984 And More

BY DAVID MORGENSTERN

I've been boning up on Macintosh-related trivia for months now, waiting for a slow news month. Here it is—the first annual MacTrivia Test. Amaze your friends, co-workers, parents, and even yourself! If you can't answer a single question, don't feel too bad. Only the hardest of the hardcore Mac know-it-alls will get a passing grade. Even Steve Costa, BMUG's director, missed a couple.

ORIGIN OF THE SPECIES

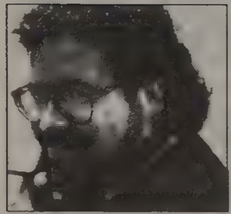
1. The original concept of the Macintosh was for it to be an appliance. Steve Jobs called it…
   a) An electric toothbrush.
   b) A loofa sponge.
   c) A Cuisinart.

2. Questions asked prospective programmers for the Mac development team included…
   a) Have you dropped acid (LSD)?
   b) Are you a virgin?
   c) Do you love pineapple pizza?
   d) All of the above.

3. The original Macintosh case had an unusual feature—what was it?

4. Steve Jobs projected that Apple would sell 450,000 Macs in the first year, based on…
   a) Careful market surveys and analysis.
   b) An exacting count of the bread mold spores in his refrigerator.
   c) An expanding self-delusional sales feedback loop.

5. The Macintosh was introduced to the world during the 1984 Super Bowl football game. The third quarter advertisement claimed that the Macintosh computer would save the world from becoming a totalitarian state. In the ad, a woman athlete ran from drab thought police, and threw a large hammer into a giant video screen. The video ended with the line, "On January 24, Apple Computer will introduce Macintosh. And you'll understand why 1984 won't be like *1984*." Which two teams played the game in question?
   a) San Francisco 49ers vs. Miami Dolphins.
   b) Chicago Bears vs. New England Patriots.
   c) Los Angeles Raiders vs. Washington Redskins.



Copyright © 1991 by David Morgenstern. All rights reserved worldwide. David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.

6. The Mac came bundled with three applications. What were they?

7. The 1.0 System software that shipped with the first Macintoshes was…
   a) Nonexistent.
   b) Buggy and crashed.
   c) Solid as a flyback transformer.

HARDCORE TRIVIA

8. Disk Swapping…
   a) Was something swinging engineers did before the arrival of computer viruses.
   b) Was what users did with early Mac models with only a single floppy drive.
   c) Is a violation of software copyright licensing agreements.

9. What were Davong, Quark, Paradise, and Tecmar?
   a) East European sedans.
   b) An Australian rock group.
   c) Macintosh hard drive manufacturers.

10. The following were code names for Macintosh hardware and software. Match them to the products they became.

1) WildCard	a) Macintosh II
2) Aladdin	b) MultiFinder
3) Happy Landing	c) The Mac Plus ROM
4) Paris	d) HyperCard
5) Juggler	e) Macintosh SE

11. The beep that sounds when the Mac is turned on is called the…
   a) Happy Mac beep.
   b) Welcome to Macintosh beep.
   c) Boot beep.

LIVING UNDER A METAPHOR

12. A disgruntled Apple employee mailed copies of proprietary ROM code to Mac publications in 1989. This person called him/herself…
   a) ROMulan Empire.
   b) Free Beer and Software Society.
   c) nuPrometheus League.

13. When Apple decided that the Macintosh was really a business machine, it stopped including a certain desk accessory in the set shipped with each system. That was…
   a) Apple Technical Support 800-Number Dialer DA.
   b) Puzzle DA.
   c) Globe DA.

14. The hot spot is
   a) A disco in downtown Cupertino a few blocks from the Apple campus.
   b) The compact Macintosh design flaw that concentrates heat from the power and video leading to premature transformer failure.
   c) The part of a pointer that really works.

SOFT HEADED

HOT TIP

A common source of Mac-frustration is the order of files while viewing by name in the Finder, and in dialog boxes. Users often begin file names with a date, but the files will not list correctly!

Unfortunately, the year is ignored, so that days clump together. The Finder doesn't think of this string of characters as a date, but follows the ASCII codes for the string. You'll find that formatting the date in year/month/day order will keep the files in correct chronological sequence. Be certain, as well, to use a zero in front of single digit numbers.

It's easy to bring a particular file, or group of files to the beginning of the list. Just place an Option+Space in front of the name, and it will fly to the top.

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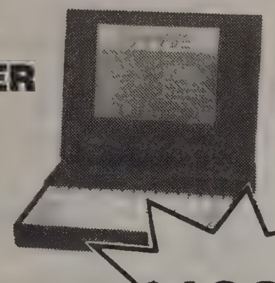

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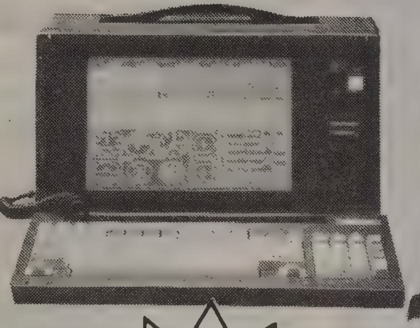

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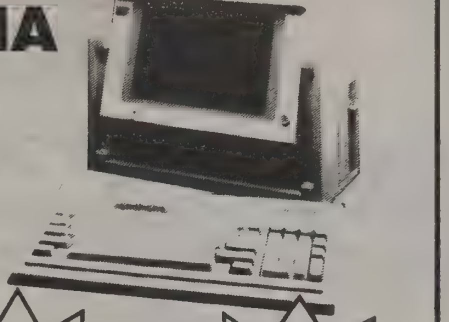

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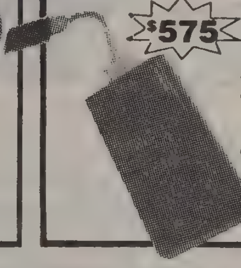

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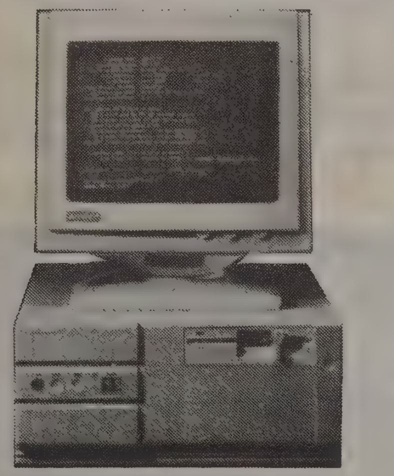

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ADI VGA (0.31 mm) (640x480)	$235
WIN Super VGA 0.31 1024x768	325
Oak VGA Card 16 Bit, 256K	75
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w/9″ monitor (720x350 TTL) 200W Auto-switch PS	$345

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MTEK 101 (non-click)	38
Maxis Switch 101	42
Omnikey Plus	80
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NOVELL® NETWORKING

386, 486 FILESERVER	CALL
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LAN Network Interface Cards:

Ethernet 8 Bit	$139
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EPROM PROGRAMMERS

High Speed 8M EPROM Programmer HEP-808	$525
EPROM Programmer, EW-901B (1 Port)	95
EPROM Programmer, EW-904B (4 Ports)	125
EPROM Programmer, EW-701 (1 Port)	125
EPROM Programmer, EW-704 (4 Ports)	160
EPROM Programmer, EW-708 (8 Ports)	235
EPROM Eraser (with Timer, 15 Chips)	90
IC Tester (ICT-302, TTL, CMOS, DRAM)	125

NEW GENERATION OF CASES

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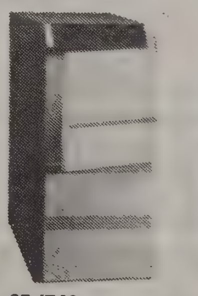
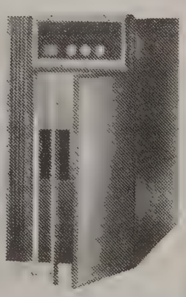


SE-AT-29

MINI TOWER



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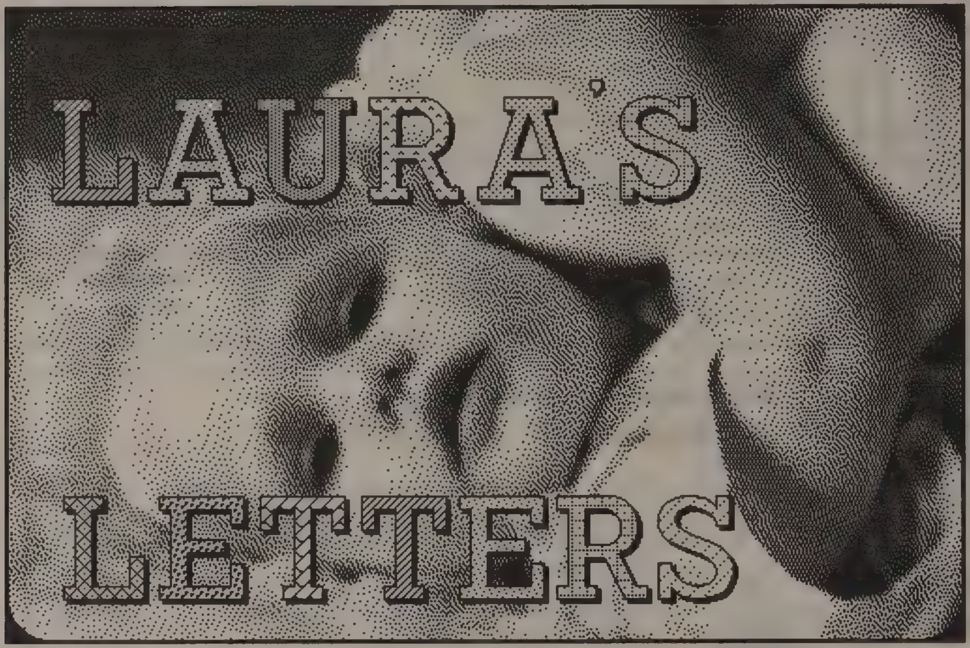
15. What was the secret feature of FullWrite Professional?

16. Who is this child?



17. MacMag, the first recognized Macintosh virus, was written by the publisher of the Canadian Mac magazine, *MacMag.* The virus was set to display a "message for universal peace" on March 2, 1988. What was the significance of that date?

a) Gumby's birthday.

b) The 100th anniversary of invention of the Hollerith Computing-Tabulating machine.

c) The one year anniversary of the Macintosh II introduction.

UP TO THE MINUTIAE WITH BMUG

18. The first BMUG meeting was held on the University of California campus on Thursday, September 17, 1984. That meeting consisted of...

a) A small group conspiracy to help the Macintosh take over the computing world.

b) Twenty-five students that thought the meeting was a prayer session for the campus ministry.

c) Over a hundred Mac lovers that wanted to see the latest and greatest.

UPCOMING EVENTS:

April 4	Portfolio Systems *Dynodex* & *DynoPage* (address book), Specular *Infini-D* (3-D modeling).
April 11	Lucasfilm *Loom* (games), Sitka (TOPS) utilities & new products.
April 18	Safe Environments *ElfARMOR*, Claris *MacDraw Pro.*
April 25	Intuit *Quicken* (home finance) Golden Triangle *DiskTwin.*
April 29	BMUG West meeting at SF Exploratorium museum. MapInfo MapInfo, Radius *ImpressIt* (compression) & *Pivot.*
May 2	TSI 68040 Accelerators, Reactor *Spaceship Warlock.*

19. What made BMUG 400K disks special?

a) The programs on them were written in Microsoft BASIC.

b) It was amazing that so many programs could fit in so small a disk.

c) If a user tried to boot off of a BMUG disk, a message "Please start your Macintosh with a System Disk, not a BMUG disk," would appear.

20. Steve Jobs came to a BMUG meeting and...

a) Showed off the capabilities of the Lisa computer.

b) Amazed the crowd with the HyperCard 1.0.

c) Gave the first public presentation of the NeXT computer.

ANSWERS—NO CHEATING ALLOWED!

1. c) Saint Steve thought it should do a little of everything. He liked the versatility of the food processor. Jef Raskin, the original head of the Macintosh project, meant it to be a "toaster."

2. c) Pineapple pizza preference is now known to be a genetic marker for programming skills.

3. Inside the back plate of the Macintosh were the handwritten names of the members of the development team. About thirty persons signed their names to the final shop drawings in July 1982, and they were incorporated into the molds used to produce the computer. The Mac was a closed box, and few users (unless they were in the repair shop) ever saw the names.

4. c) The actual first year's sales figures of 250,000 were exceptional. Unfortunately, they were nowhere near the fantasy expectations that Steve floated to the press, and the Apple Board of Directors.

5. c) The Raiders destroyed Washington 38 to 9 in Super Bowl 18, held in the Rose Bowl, Pasadena. For the real trivia buffs, the woman was dressed in a Macintosh t-shirt and red shorts.

6. MacPaint, MacWrite, and the Finder. The Finder is an application that connects you to the desktop. It's not part of the Macintosh operating system, which is buried deep in the ROM.

7. a) A trick question—the first Macs left the factory with the .97 version of the System. Almost all odd-numbered Mac Systems have been problem children. Looking forward to 7.0?

Our two new BMUG books, *Zen and the Art of Resource Editing*, and *HyperTalk 2.0: New Features*, are still available! They're $15 each, and come with a disk. You can buy them through the BMUG office, or even through some computer stores. Ask your favorite shop if they have a copy. If not—give them a BMUG hump!

8. b) It was always a test of patience, and of wrist strength, saving long documents on 128K original and 512K Fat Macs. The worst case was installing new DAs and fonts into a System file—back and forth, disk to disk, byte by byte, minute by minute. Ouch!

9. c) The early Mac hard disk developers *and* users were rugged pioneers. The drives rarely worked correctly, and were expensive—

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486-25/C	$ 1499	$1714	$1934	$1974	$ 2269	LM-114 MHZ
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17 inch (1024X768) NON INTERLACED / INTERLACED + 16 bit VGA CARD w/ 1MB RAM	$ 999

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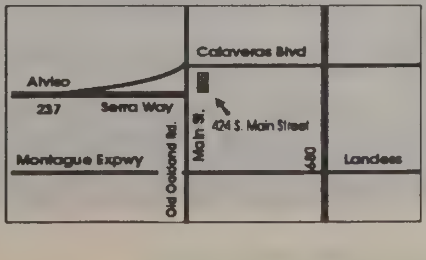


Top Ten Ways Life Would Be Different If Computers Ran the World

10. Digital signal processor indicted as co-conspirator in Milli Vanilli fiasco.

9. Hexadecimal satisfies secondary education foreign language requirement.

8. "Self Repair" is popular section in bookstore.

7. Constitutional amendment extends right to vote to microwave ovens.

6. Users sued for not holding to recommended maintenance schedules.

5. Talk shows highlight problems of nocturnal VDT emissions.

4. Microsoft rejects assertion that O/S updates are rights, not privileges.

3. 2001 removed from video libraries for negative stereotype portrayals.

2. Census figures for derelicts, homeless, and laptops questioned by user groups.

1. Government officials attacked for poor memory and slow response times.

the January 1985 price for a 10MB drive was between $1,500–1,900. Some drives could only be attached to the modem port, making it impossible to use the drive when telecommunicating.

Early versions of the drives could not be partitioned into multiple volumes. Primitive desktop files were quickly trashed, and it was dangerous to keep more than a couple of megabytes filled.

10. 1) WildCard/HyperCard, 2) Aladdin/Macintosh SE, 3) Happy Landing/The Mac Plus ROMs, 4) Paris/Mac II, 5) Juggler/MultiFinder.

11. c) Is it only me, or does the boot beep seem exceptionally loud? My desk always shakes when I start up my old Fat Mac, and the sound hits me between the eyes. The Mac II chord is much gentler to my eardrums.

12. c) The F.B.I. ran around the Bay Area interviewing a variety of unlikely suspects. It is now considered a high honor to have been included in the investigation.

13. b) The puzzle was a cute desk accessory emulation of the little square plastic number puzzles with one spot missing, and pieces that could be shifted around.

14. c) The whole pointer is never active, just one pixel, called the Hot Spot. ResEdit allows you to change the hot spot.

15. Hidden in the word processor was a Pig Latin translator. By deleting and undeleting selected text a few times, you'd get Pig Latin. An unreleased program is the programmer's playground.

16. This is the daughter of Bill Atkinson, the father of HyperCard!

17. c) The Universal Message of Peace virus started in a HyperCard stack showing Apple's new products. It later spread around the world in a demo for the graphic program, FreeHand.

18. c) The meeting proceeded like all future meetings: question and answers, followed by a few demonstrations. That night everyone got to see the speech synthesis program MacInTalk, an early Mac hard disk drive, and the first native programming language for the Mac, MacForth.

19. c) This awesome hack was by Sam Roberts, an early BMUG member, who now works at Farallon Computing. He altered the boot blocks of the disk, and created a micro-font that would display the message. Ordinary disks would just be spit out. This hack only worked on MFS (Macintosh Filing System) disks.

20. c) The Physical Sciences Lecture Hall was packed to the rafters that night—over five hundred devotees in attendance. A recent BMUG poll showed over three thousand members in the audience. My memory is getting worse, but I would have remembered two or three people sitting in my lap.

SCORING

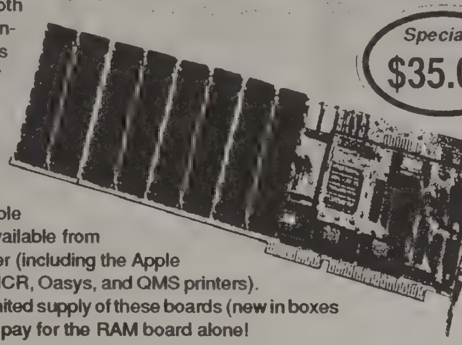
1–5 Time to get cracking on your trivia homework. A BMUG membership is a requisite for the class, and a bargain at $40 a year.

6–10 A very good score. You would have done better if you had gone

Spring Specials are Blooming at HSC!

You can still take Control of your Laser Printer & increase your AT's RAM!

It's back! We just got some more in! If you own an original (6 MHz) IBM AT and an older HP Laser Jet printer with non-upgradeable memory and no down-loadable font capability, you know how limiting and slow that is! And if your AT only has 512K or even 640K of RAM, you probably wish you could take full advantage of software packages that use the LIM EMS standard for Expanded Memory. Now you can solve both problems and only use up one system slot with Tall Tree Systems' JRAM AT-3 EMS RAM Expansion boards with the JLaser Plus controller. The JRAM AT-3 Board will hold up to 2 Megabytes of 256K DRAM chips (not included), and can be configured to add the memory anywhere in your system (even "on top" of other banks of RAM you may have installed). You can install up to four JRAM boards in a system. You also get the Tall Trees software package which includes the device drivers for the RAM board as well as RAMdisk and print-spool software. The real plus to this deal, however, is the JLaser Plus Laser Printer Controller module. This piggy-back unit assumes control of your laser printer engine and uses its JRAM memory to speed up and enhance your laser printing capabilities. It even works with Bitstream Fontware downloadable fonts for an expanded font library! You need a special interface cable (not supplied, but available from TallTree Systems) which hooks up inside your Canon LBP-CX or LBP-SX engined laser printer (including the Apple Laserwriter, HP LaserJet, LaserJet Plus and Series II, and various Canon, Cordata, Imagen, NCR, Oasys, and QMS printers). It even has an input for a Canon IX-12 Scanner! Now the best part...we just received another limited supply of these boards (new in boxes with 0K RAM) available at a closeout price of $35.00! Less than half of what you'd expect to pay for the RAM board alone!



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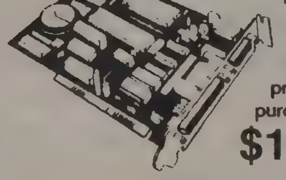
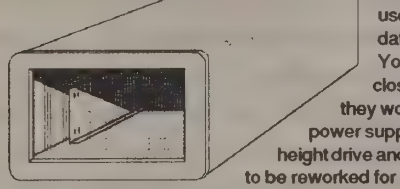


It seems like you can never have enough ports in a workhorse machine, and one of the first add-ons that anyone wants to put into their XT Compatible computer is a clock/calendar feature. This multi-function board was designed to solve several needs in an economical way, and our recent volume purchase just made it even more cost-effective! The Suntek I/O Extension-X features a Serial Port, a Parallel Port, a Game Port, a Clock/Calendar with Battery Back-up, and the sockets for adding a second Serial Port. It comes with software for the Clock Utility, and a Print Spooler to allow your print data to be queued to the printer while you use your computer for other tasks. These sorts of boards typically sell for $30.00 to $50.00, but our special purchase allows us to offer these useful items for the unheard of price of $19.95! Get 'em while they last!

$19.95

Does your Hard Drive need a home?

How about your CD-ROM Drive? Or your Tape Back-up? Floppy Drives? Eventually, if you keep adding drives to a system, you run out of places to put the drives! External drive enclosures are the only way to go, but they have not been attractively priced until now. HSC just acquired a large shipment of two different types of external drive enclosures that will allow you to house extra computer drives without mortgaging your house! Type "A" enclosures at left are used units, measure 8" x 5 1/2" x 15" and feature a 40-Watt switching power supply with two drive connectors, 3" cooling fan, and room for one full-height or two half-height 5 1/4" drives. They are finished in a beige-and-grey color scheme similar to the original IBM XT or AT (and thus about 99% of all clones!), but as they are used, there may be minor blemishes. You will need to provide your own data interconnect cable, but a standard IEC power cord is included. You have seen these types of enclosures advertised elsewhere at close to $100.00, but we're offering these at less than half that! Hurry, they won't last long! Type "B" on the right is a brand-new empty case (no power supply) that measures 7 1/2" x 2 3/4" x 14". These will accept one half-height drive and leave room for a small power supply, although the rear panel may need to be reworked for your application. They are light beige in color. Either way, you now have room for all your drives!



Type "A"
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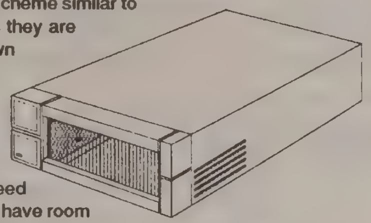

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Charge into Spring with Rechargeable Lead-Acid Batteries!

As we went to press with this ad, we still had a good supply of Yuasa NPx-12 Series batteries, rated at 12 VDC, with 1989 and 1990 manufacture-date codes. The 1/4" spade terminals show signs of prior connection, but since they were shipped in the original manufacturer's crates, we believe this is just evidence of the testing company. They look new to us! We have a lot at press time, but these are very popular items and supplies are limited! We have three different types:

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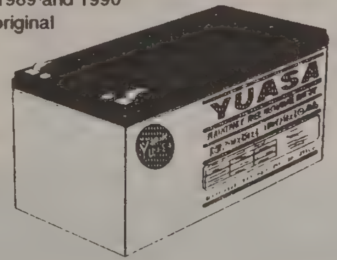

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over some source material. There are still some back issues of the BMUG Newsletter available for $6 each.

11–15 You must have bought a Mac in 1984, or '85. Have you renewed your lapsed BMUG membership, you Mac-know-it-all?

16–20 MacTrivia Master, I bow to your virtual memory! ■

What Is BMUG?

BMUG is an educational nonprofit consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its 10,000 international members. BMUG supports many Special Interest Groups (SIGs), has an eight-line Bulletin Board System (BBS), a free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6-9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center St. (a half block from the BART Station) is open to the public from 9 am. to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with 600+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II,* our library and more on CD-ROM.

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut St. #62, Berkeley, CA 94709. If you prefer to phone our business office, call (415)549-BMUG, or FAX (415)849-9026.

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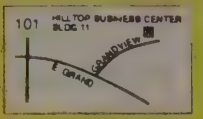

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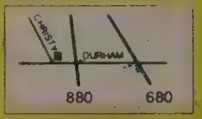

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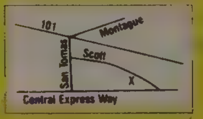

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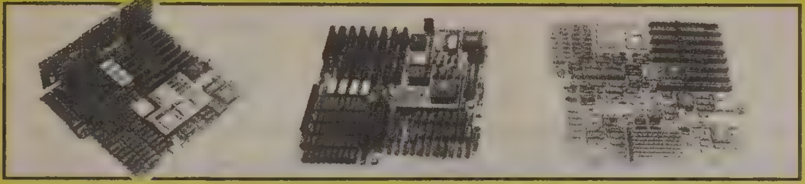

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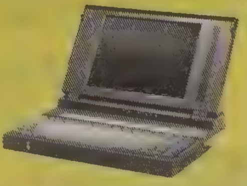

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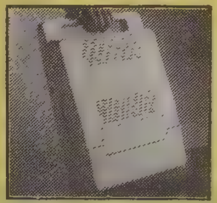

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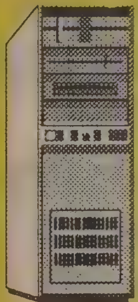

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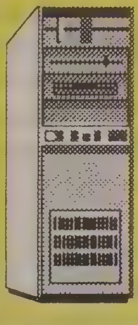

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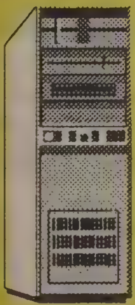

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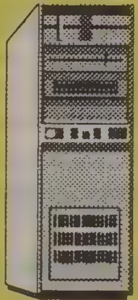

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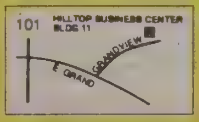

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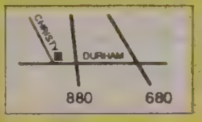

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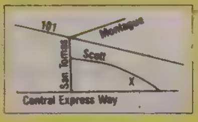

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Hand Scanner & TBC

(More Amiga Input)

BY MATTHEW LEEDS

AMIGA

It used to be that if you wanted to bring flat art into your Amiga, you needed a DigiView, a camera, a copy stand, copy lights, and a lot of desk space. Now, if you can forego color, you have an excellent alternative in the MiGraph Hand Scanner.

The scanner can handle images up to four inches wide and up to fourteen inches in length. It scans at 100, 200, 300, and 400 dots per inch, and will produce either line art (black & white) or dithered halftones. It has a contrast adjustment for light or dark images.

You view your artwork through a transparent window as you pass the scanner over it, and the scanning light's reflection is visible, so you can tell exactly what part of your artwork you're currently scanning. There's even a warning light that alerts you if you're starting to move the scanner too quickly over the art.

The scanner is used in conjunction with an application called TouchUp, an image editor and design tool for monochrome images. It offers a few useful functions, but has a poor user interface. If you don't own a paint program you could use TouchUp for editing, but Deluxe Paint does a much better job. For example, on my A3000 I run an interlaced display. This gives me much more usable screen area, but text appears smaller than normal. TouchUp uses a custom mouse pointer, which, combined with the small text in menus, makes it almost impossible to read the menu items, since they're obscured by the mouse pointer.

Fortunately TouchUp exports IFF images. You can save a scanned image as a monochrome dithered image, as a 16-level grayscale image, or as a 16-level grayscale dithered to 31-level grayscale image. You can also save images as TIFF, MacPaint, PCX (IBM format), IMG, Degas, and NEOchrome files. TIFF files can be saved for use on Amiga, Mac, Atari ST, or IBM platforms.

In theory you can use the scanner on a 1MB system, but you're limited in the size and resolution you can select. You really need a minimum of 2MB to use this package.

The scanner comes with a separate power supply and an interface box that plugs into the parallel port. There is no pass-thru on the interface box, so unless you have a switchbox, you can't print and scan in one session. In addition, the manual warns against switching the switchbox when you have power supplied to the scanner interface. The placement of the parallel connector on the interface made it impossible to attach it to my A3000, and I had to raise the switchbox up off my desk to attach the interface to it. If you plan to use the scanner with an A1000, you'll need a different interface, which is supplied free for the asking.

Despite the problems I had with the interface, my displeasure with the manual, and my mixed feelings about the TouchUp software, the scanner itself is excellent. Once I learned how to use it, I was very pleased with the results. (However, someone should revise the section in the manual addendum that claims to be "a complete set of instructions for scanning images"; they leave out the first few steps, and need up-to-date graphics for the icons you need to click on.) Scans are easy to do, the results show up almost instantly on the screen, and the options allow you to try out the effects of different scanner settings quickly.

The scanner is excellent for bringing in logos, line art, photographs, and other material for publishing, presentation, and other uses. I used it to scan in several logos that I then used for title effects in Video Effects 3D. The scanner leaves few or no stray pixels, unlike a video scan, and it requires far less space on my crowded desk. I wish that MiGraph had seen fit to provide a scan-only application with a cleaner interface as an alternative to the TouchUp program, as I rarely used it. In particular, a small scan-only application with a REXX port would be very useful for grabbing images into a REXX-capable paint program, or into The Art Department.

If your main need in digitizing art is for black & white or grayscale images of reasonable size, the MiGraph Hand Scanner is an excellent choice. It requires far less peripheral hardware than DigiView, and generally gives better results in those situations where it's suited. MiGraph is also working on a color version of its hand scanner—the hardware is done, it just needs to develop the software. If you need a color hand scanner, you might give them a call to encourage them to speed up the process.

The MiGraph Hand Scanner is excellent for bringing in logos, line art, photographs, and other material for publishing, presentation, and other uses. It leaves few or no stray pixels, unlike a video scan, and it requires far less space on my crowded desk.

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The Personal TBC accepts either standard composite video or Y/C S-video as input, and also accepts an external genlock signal. It only has composite video output. A second output connector can supply one of the following: composite video, reference loop, or advanced sync (used with high-end VTRs). The correction window is full frame, and the bandwidth is sufficient for the S-video signal.

In many respects this TBC is an excellent match to NewTek's Video Toaster, since that product requires time base stabilized video for input, and only accepts composite video input. In addition, since the Personal TBC only uses the IBM slots in the 2000, it leaves room for the additional cards that NewTek has hinted it will add to the Toaster family. I plan to take a more in-depth look at both the Toaster and the Personal TBC in a future column. ■

RESOURCES:

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Copyright © 1991. All rights reserved. Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

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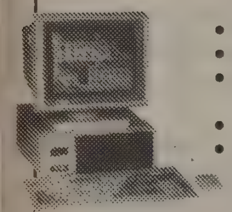

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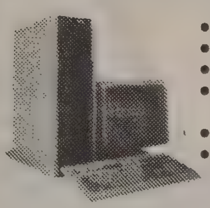

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Fun And Games

Strategy Tips

BY DAVID HAWKINS

ATARI ST

I'll be back to the serious stuff next month, I promise. But lately I've spent a lot of time playing games on my Atari, so for this month, here are a few tips, clues, and spoilers.

EMPIRE

I've met people who have trouble with Interstel's Empire, so a few tips on it first. Remember that if you control most of the cities, then beating the computer is easy. I send off ships in every direction—not directly at the enemy. My rule of thumb is that if I have more cities than the computer, I'll win. Also, I only build three things if I can help it: armies, troop transports, and battleships. If I have land-locked cities and don't need armies from them, I'll build fighters.

CHAOS, AGAIN

Chaos Strikes Back (from FTL/Software Heaven, PO Box 112489, San Diego, CA 92111) has been out more than a year. It's the follow up to Dungeon Master. I'd planned on waiting for the cheat sheets on Chaos to come out, but haven't found any yet. While I was waiting, I was tired of winning at Empire, so I built up a Dungeon Master team and transferred them over.

You can start Chaos Strikes Back with a new set of characters, but it helps to have a well-developed team already. What I did was pick four from Dungeon Master, take them through the dungeon and then go back to level 5. At level 5 there's a room where the Screamers (green bushes) are regenerated. If you go back from there toward the start of that level, a few other monsters will appear—you can fight through them over and over and raise your team a few skill levels.

The trick here is to get each member stronger at all four skills: wizard, fighter, priest, ninja. The great thing about the Screamers is that you can kick them apart and get ninja points. (To kick something, take everything out of the character's weapon hand and put them on the front of the team.)

Once you've got a strong Dungeon Master team, you can use the Chaos Utilities disk to convert them to Chaos Strikes Back. They'll lose all their armor and weapons. It makes the start of Chaos interesting, and it might take a few tries to survive the first few minutes of Chaos. (Took me three tries.)

CHAOS SPOILERS

Skip the following if you don't want specific advice about the start of Chaos Strikes Back.

When you start off, you're on a pressure plate that creates two worms every time you get on it. So avoid it unless you need more monsters. Also, of the various things you can buy in that area, you need the compass more than any of the rest. There's some free armor in a hidden wall section. You can also open up another wall section by putting a torch in the empty torch holder.

Next you want to get some of the "Supplies for the Quick"—which you get by going through that room as fast as possible, grabbing just one item each time. Once you get the supplies you need, then try for getting the flask. It will come in handy later. By the way, if you ever get stuck in the room where you have to give up all your armor and weapons, they reappear in Supplies for the Quick.

Beyond that, you're on your own. Carry the compass where you can see it, and notice when you've been transported. Otherwise it gets very confusing. Watch your characters' water and food levels. There's less food available, compared to Dungeon Master.

NEW FALCON MISSION DISK

Falcon (from Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA, 94501, 415/522-3584) is an F-16 fighter simulation, and there are some new mission disks available. Mission Disk II is air-to-air fighting, instead of air-to-ground. You still need an original copy of Falcon to try these new missions. So if you like Falcon, this is a chance to expand your skills.

QUOTE FOR THE MONTH

"Whatever games are played with us, we must play no games with ourselves, but deal in our privacy with the last honesty and truth."

—Ralph Waldo Emerson ■

Copyright © 1991 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco. Both monitors, an Okimate 20 color printer, and disks are all over the room.*

Once you've got a strong Dungeon Master team, you can use the Chaos Utilities disk to convert them to Chaos Strikes Back. They'll lose all their armor and weapons. It makes the start of Chaos interesting, and it might take a few tries to survive the first few minutes of Chaos.

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80486

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25 MHZ DX add $300
25 MHZ Cache +$500
33 MHZ Cache +$700
for 486 upgradeability add $200 for a card upgradeable system
1 YEAR PARTS & LABOR
1 Floppy·101 kb
Parallel & Serial

Panasonic
1180=$179
Canon
BJ=$375

Mectel
'286 20 HD
VGA 7lb.
$1695 !

$475

MacLink=$129 PCLink=$99 Topper=$20 Case=$25

Soon to go up in price, the **CAMBRIDGE Z88** is an ideal journalist's or student's machine @1.8 lbs with silent keys and 22 hours of use on 4 "AA" batteries. For the MAC $700 complete. For IBM or Atari only $650. You'll love it!

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520STFM	**$349**
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Color Monito	**$355**
30 Meg HD	**$399**
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Notator MIDI	**$500**
Pagestream	**$155**
1st Word +	

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32MHZ/TT030
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386-33
TEMPO 386
386-25 / 20 / 16
386-16SX notebook

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1MB, IDE Adapter, 1.2 Teac Drive
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Mitsumi 101 Keyboard,
Free QA Plus Diagnostic software

486-33 w/ 64K cache	$3325
486-25 w/ 64K cache	2155
386-33 w/ 64K cache	1345
386-25 w/ 64K cache	1245
386-25 w/o cache	1075

DTK COMPUTER INC.

FCC B, 1MB, 64K Cache
1.2 Teac Drive, IDE Controller
2S,1P,1G, Tower Case, 101 KB

486-25	2255	386-20SX AT Case	855
386-33	1355	386-16SX AT Case	765
386-25 FCC A	1095	286-16 AT Case	595
386-25 AT Case	1095	286-12 AT Case	495

AST

1. 8087, 287, 387

CYRIX	
83D87-16/20/25/33	$260/285/385/440
IIT	
2C87-8/10/12/20	175/185/215/255
3C87-SX16/DX16	265
3C87-20/25/33	285/385/440
INTEL	
8087-4/8/10	80/115/140
80287-6/8/10	125/175/195
80287XL	195
80387-SX16/DX16	285
80387-20/25/33	345/435/545

2. 1Meg , 256K , 64K

DRAM	
1 Meg x 1-8	$4.90
256K -8/10/12/15	1.45/1.40/1.40/1.40
256K x 4 -8	5.10
64K -10/12/15	1.45
64K x 4 -10	2.50
SIMM	
4 Meg x 9 -8	265
1 Meg x 9-8/10	48
256K x 9-8	15
SIPP	
1 Meg x 9-8/10	50
256K x 9-8/10	16

3. ADD-ON CARDS

DTK	
Monographic w/ Printer	$38
640K RAM Card (XT)	35
Hexa I/O (SP,G Ck, Cont) (XT)	48
Penta I/O (SP,G,Ck) (XT)	39
AT I/O (SP,G)	35
Mini AT I/O (S,P)	30
AT I/O w/ IDE Controller	69
AT I/O w/ IDE Controller (Non DTK)	50
Serial Card (XT)	19
Printer Card	19
Game Card	19
EVEREX	
Magic AT I/O	49
Magic AT I/O w/ Game port	57
Controller (see controller section #7)	
VGA (see VGA section #22)	

4. BOOKS

All New Books 15% off
Microsoft Press
Osborne MacGraw-Hill Press
Peachpit Press (desktop Publishing)

5. C D ROM

SONY	
CDU 531-11 500MB	495

6. CASES

AT Jr Case for XT	$30
Baby AT w/ Power	105
AT Case	50
Baby Tower w/ Power	115
Mid Baby Tower w/ Power	145
Mid Baby Tower w/ Power	145
Tower AT w/ 220W Power	175

7. CONTROLLERS

ADAPTEC	
2322D 1:1 ESDI	$195
1542B SCSI w/ kit	305
DTC	
3280 SCSI	125
6280 1:1 ESDI	145
7280 1:1 MFM	70
7287 1:1 RLL	99
DTK	
Floppy Controller (XT)	18
Controller 1.2 & 1.44 (XTAT)	40
IDE Controller	35
IDE w/ AT I/O (P,2S,G)	69
FUTURE DOMAIN SCSI Controller	
TMC 850 for XT (H only)	85/145 kit
TMC 875 for XT (F & H)	135/215 kit
TMC 860 for AT (H only)	125/145 DOS/265 kit
TMC 885 for AT (F & H)	145/175 DOS/265 kit
TMC 1660 for AT (H only)	165/205 DOS/295 kit
TMC 1680 for AT (F & H)	195/245 DOS/315 kit
ULTRASTOR	
ULT 12F/32 32K ESDI cache	195
ULT 12C/1 1MB ESDI cache	575
WESTERN DIGITAL	
Gen Card (XT)	55
1003V 2:1 MFM	85
1006V 1:1 MFM	99
1006SR 1:1 RLL	115
1007 SE2 ESDI	165

8. DRIVES

TEAC	
360K	$60
720K 3.5" w/ frame	62
1.2MB 5.25"	70
1.44MB 3.5" w/ frame	70
CONNER (IDE)	
CP-3044 40MB 25ms	255
CP-3104 100MB 25ms	465
CP-3204 200MB 16ms	765
MAXTOR	
4170-170 (167)MB 14ms ESDI	825
4380-380 (338)MB 16ms ESDI/SCSI	1195
8760-760 (676)MB 16ms ESDI	1850
LXT 213SY 200MB 16ms SCSI 3.5"	795
MICROSCIENCE	
HH1090 80MB 25ms MFM 5.25" 1/2ht	375
NEC	
D3142 40MB 28ms MFM	275
D3661 100MB 18ms ESDI	565
D5655 150MB 18ms ESDI	675
SEAGATE	
ST-225 20MB MFM	190
ST-251-1 40MB 28ms MFM	245
ST-4097 80MB 28ms MFM	555
ST-157A 40MB 28ms IDE	215
ST-1102A 80MB 19ms IDE	395
ST-1239a 230MB 15ms IDE 3.5"	715
ST-277N 64MB 28ms SCSI	345
ST-296N 84MB 28ms SCSI	375

EXTERNAL DRIVES (F & H)

PACIFIC RIM	
1.2MB for PS/2 (connect to motherboard)	195
1.2MB for XT/AT (with controller)	215
1.44MB for XT/AT (with controller)	215
1.2MB for PC/Laptop (connect to printer port)	245
1.44 MB for PC/Laptop	245
1.2MB for Toshiba (except 1000,1100,1200)	195
40MB HD for PC/Laptop (connect printer port & outlet power)	595
100MB HD for PC/Laptop	895

9. KEYBOARDS

NORTHGATE OMNI	
101N / 102	$69/74
Plus / Ultra	89/102
Keyboard cover for 101/102/Plus/Ultra	15
OTHERS	
KEYTRONIC 101	50
MAXI 101	45
MITSUMI 101	45
101 Keyboard cover	4

10. LAPTOPS

CANON	
BJ-10e (Bubble jet printer, 4.5lb)	$319
See Printers Section #19	
EVEREX COMPUTER SYSTEMS DIVISION	
Tempo LX 386-16SX, 1MB, VGA LCD 1.44FD, 21MB HD, DOS 4.01, 7lb	2199
2MB card	450
Battery	125
Charger	95
Modem	275
PANASONIC	
CF-150B Backlit LCD 720K FD w/ carrying case	595
Battery for CF-150B	29
CF-170 8086 Backlit LCD 1.44 FD, 20MB HD	1575
TOSHIBA	
T1000SE / T1000XE	999/1195
T1200XE	2085
T1600 -20/40	2195/2495
2400 int modem	259
1MB / 2MB for T1000SE/XE	250/360

11. LASER PRINTER ACCESSORIES

IQ ENGINEERING	
Super Cartridge 1 for all HP Laser Jet & True HP Compatibles	195
Super Cartridge 2 for HP II, IID, IIP, III, IIID	305
Super Cartridge 2 & 2LC	395
Super Cartridge 3 for HP III, IIID	325
Desk Jet Plus Std / Pro	105/149
Desk Jet 500 Std / Pro	125/175

HP see HP in Printer section #19
PACIFIC DATA see last column of next page
PANASONIC see Panasonic in section #19

12. MEMORY CARDS

EVEREX	
XT 2MB, EMS	$55
Ram 3000 Deluxe (AT 3MB, EMS)	84
Ram 8000 (AT 8MB, EMS)	165
Ram 10000 (AT 10MB, EMS)	125
Ram II 4000 (PS/2-5,6,7,80)	195
INTEL	
Above Board w/ 512K	295

13. MODEMS & FAX

EVEREX	
Evercom II (1200 Baud Int)	$48
Evercom 2400 Baud Int/MNP5	99/145
Evercom 2400 Baud Ext MNP5	185
Fax Modem Int 2400/9600 w/ MNP5	239
Pockt Modem for Laptop 2400 & MNP5	215
FRECOM	
Fax 96	145
Fax 96 w/ 1 Liner & Far Fetch Fax	199
HAYES	
9600 v.42 & v.25 BIS	665
Personal Modem 2400	165
SmartModem 2400B Int /2400Ext	245/385
intel	
SatisFaxtion card	399
VIVA (Computer Peripherals)	
2400 Ext IBM / APPLE	115/125
2400 Ext w/ send fax	125
2400 Ext w/ MNP5 (IBM/APPLE)	145

14. MONITORS

ADI	
14" mono amber/paperwhite	$109
14" VGA mono (720x400)	125
14" VGA (1024x768, .28)	355
HYUNDAI	
12" mono	70
14" 402B VGA (720x400, .39)	259
IMPRESSION	
14" CM414E (1024X768, .28) VGA	345
MATSUSHITA	
ViewPerfect 2 (640x480), .29)	305
ViewPerfect 3 (1024x768, .29) Int	445
ViewSonic 4 (1024x768, .29) Int	345
MITSUBISHI (w/ base)	
16" HL6605ATK (1280x1024) Non-Int	1095
20" HA3905ADK (1024x768)	1550
20" HJ6905 (1280x1024, .31) Non-Int	1795
cable	45
NANAO	
16" 9070S (1024x768, .31) Non-Int	925
156" 9070U (1024x768, .28) Non-Int	995
16" 9080i (1024x768, .28)	1355
NEC	
14" 2A (800x600, .31)	455
14" 3D (1024x768, .28) Int	575
16" 4D (1024x768, .28) Non-Int	995
20" 5D (1280x1024, .31)	2095
PANASONIC	
14" 1381 (1024x768, .28)	395
15" M1500AT (1280x960) 126dpi paperwhite w/ VGA card	1050
POWER	
14" Power 2 (1024x768, .29) Super VGA	325
QUME	
830 (640x480, .41)	249
835 (1024x768, .28) Int	365
RELYSIS	
15" RE1520 (1024x768, .31) Non-Int	575
SAMSUNG	
CJ4686 (640x480, .52) VGA	225
CVB4581 (1024x768, .31) Int	335
CVB4587 (1024x768, .28) Int	355
17" CSA 7571 (1024x768, .31)	895
SEIKO	
14" CM1450 (1024x768, .31) Non-Int	625
20" CM2050 (1024x768, .31) Non-Int	1650
SONY	
1304 (1024x768, .25) Non-Int	645
TAXAN	
14" Super Vision 720 RGB CGA	150
20" UV1000 (1280x1024, .31) Non-Int	1450

15. MOTHERBOARDS

DTK	
8088 XT-12	$69
286-12	150
386SX -16/20	355/495
386-25 64K cache	705
386-33 64K cache	895
VLSI	
286-12/16 (VLSI)	125/175
386SX-16	345
MICRONICS	
386-25 (no cache)	695
386-25 64K cache	895
386-33 64K cache	995
486-25 64K cache	1795
486-33 64K cache	2995
MICRONICS ACCESSORIES	
4MB Piggy Back (to 8MB)	595
16MB Memory Card	150
32K 2-Way cache	55
387 Adaptor	65
BOIS Award/Phoenix (386)	60/pair
Keyboard Chip	30

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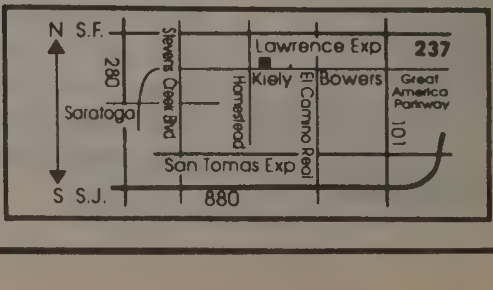

PACIFIC
DATA PRODUCTS

HEWLETT PACKARD

POSTSCRIPT Emulation

Pacific Page & 2MB for II	389
Pacific Page P.E. for IID, IIP, III	325
Pacific Page & Pacific Talk for Mac & IID, IIP, III	450
Pacific Type	265

FONTS

25 in One! III for II, IID, IIP, III	265
Headlines Cartridge for II, ID, IIP	185
Pacific Outlines I / II for III, IIID	185
Complete Font Library for III, IIID	265

MEMORY

1-2-4 Plus for II,IID	
1MB	$140
2MB	190
4MB	290
Pacific 4 Memory for IIP, III	
1MB	120
2MB	170
4MB	270
LP Memory for IBM 4019E	
1MB	140
2MB	190
3.5MB	265
Pacific T Memory for Epson 6000	
2MB	225
4MB	325

OTHERS

Driver & Cable for Mac & II	115
Pacific Bar Code for II, IID, IIP, III	315
Pacific Connect for II,IID,III,IIID 5PC or 4 Mac to a printer 256K / 1.25MB	265/299
Pacific Print for network for II, IID, IIP, III, IIID	225
Plotter Cartridge for II, IID, IIP, III	225

16. MICE

LOGITECH	
C-9 Serial/ Bus Mouse	$69/75
C-9 Serial Mouse w/ Win 3.0	130
Catchword	110
Mouseman	69
Scanman Plus / 256	139/285
Trackman	85
MICROSOFT	
200PPI serial	69
400 PPI serial / bus	99
MOUSE SYSTEMS	
Omni Mouse II	35
PC Mouse III	89
PC Trackball	56
The White Mouse	56

17. NETWORK

3 COM	
3C503 8 bit	199
5 packs (5 boards 1 manual)	799
3C503-TP 8 bit / 5 packs	269/1160
3C505 16 bit, 256K / 5 packs	579/2620
3C507 16 bit / 5 packs	289/1250
WESTERN DIGITAL	
Ethercard Plus Elite 8bit / 16 bit	145/185
CABLES & ACCESSORIES	
RG58 (BNC Male Connectors on each end) Thin Ethernet Cable 10'/25'/50'	15/20/30
RG58-Twist	3
RG58-Crimp	2.80
RG58 50 Ohm Terminator	4.50
BNC "T" Connector F/M/F	4.50

18. POWER SUPPLY

150W (XT)	$45
200W for Baby AT	60
220W (AT)	60
220W for Tower	78
Hard Disk Drive Casing 65W	69
330W / 500W / 1200W (UPS)	199/399/899

19. PRINTERS

CANON	
BJ-10e w/ bag (Bubble jet) 360 dpi	$319
Auto Sheet Feeder	85
Battery	45
Print Head Cartridge	22
CITIZEN	
GSX 200 (9 pin)	165
GSX 140 (24 pin)	285
Auto Sheet Feeder for GSX 140	129
Color Option	Add 45
GSX 145 (24 pin, 132 column)	415
Color option for GSX 145	65
EVEREX ABATON	
Postscript Laser (3MB)	1795
FUJITSU	
DL 1100 mono / color	295/345
DL 3400	365
color kit	95
DL 4600 5-part form, bar code printing mono / color	call
HP LASER	
IIP w/ toner	855
III w/ toner	1555
IIID w/ toner	2495
Envelope Cassette (15 envelopes)	55
HP Postscript Cartridge	495
Legal Tray for HP II & III	55
Letter Cassette for IIP	160
Paper Tray for IIP	65
Toner for UP II/ IIP/III	85/75/85
Panasonic Office Automation OA	
1180	145
1191	225
1124	269
1624	349
32K Buffer for above printers	65
Serial interface card	65
4420 Laser	775
Developer KX-PDP2	95
Drum KX PDM2	99
Envelope Tray KX-P431	59
Fonts Card	95
Legal Tray KX-P425	45
Toner KX-P451	39
4450i Laser	1175
1MB Memory Card	199
Developer KX-PDP1	95
Drum KX-PDM1	145
Envelope Tray KX-P430	59
Fonts Card	95
Legal Tray KX-P420	45
Toner KX-P450	35
4455 (Postscript) same as 4450i	1975
QMS	
QMS-PS 410 4ppm, 2MB, 45 Fonts	1995
Envelope Tray	69
Legal / Letter Tray	69
Lower Paper Cassette	139
Toner	95
QMS-PS 810 8ppm, 2MB	2995
QMS-PS 2210 / 2220	call
ColorScript 100-10 4MB, 35 Fonts	6595
ColorScript 100-30i	call
SEIKO	
Smart label Printer (IBM/APPLE)	175
PELICAN	
All type ribbons	visit us
Toner for Laser Printers	visit us

20. SOFTWARE

ADOBE Adobe Systems Incorporated	
Complete Type Library	call
Illustrator for Mac / Win 3.0	335/285
Plus Pack for Mac/Windows 3.0	285
Postscript Cartridge for HP II	285
Streamline for Windows 3.0	225
Type Manager for Mac/Windows 3.0	62
Type Cartridge 1: Display Faces	235
Type Cartridge 2: Best Sellers	235
Type Set 1/2/3 for Mac/Win 3.0	75/75/105
Microsoft®	
DOS 3.3/ 4.01	60
DOS 4.01 w/ Windows 3.0	130
Entertainment Pack for Windows 3.0	35
Excel for Windows v3.0	299
Flight Simulator	39
Learning DOS	35
Microsoft C	309
Mouse Serial 200PPI	69
Mouse Serial/Bus 400PPI	99
Mouse w/ Paintbrush	99
Mouse w/ Windows 3.0	157
Office (Excel, Word, Power Point)	650
OS/2 Presentation Manager Tool Kit	309
Power Point for Windows	309
Productivity Pack for Windows	45
Project for Windows	429
Quick Basic 4.5	62
Quick C Compiler w/ Quick Assembler	125
Software Development Kit	309
Windows 3.0	69/84
Word	207
Word for Windows 3.0	299
Works	99
Works w/ Mouse	159
FOR MACINTOSH	
E-Mail Mac Server 2.0	259
Excel 2.2	259
Office (Word, Excel, Powerpoint, Mail)	539
Powerpoint 2.01	259
Word 4.0	259
Works 2.0	205
WordPerfect $100 rebate for student/faculty members Free Licenses for schools call for details	
DataPerfect / DrawPerfect	275/255
LetterPerfect / PlanPerfect	135/255
WordPerfect 5.1	239
WordPerfect Executive / Office	145/95
OTHERS	
Borland Turbo C++ (Dos Version)	95
Central Point Backup 6.0	65
Corel Draw 2.0	349
Davidson Education Algebra/ Read/ SAT/ Spelling	30 & under
DESQ View	
286 v2.3	79
386 v2.3	141
Fastback Plus	112
Geoworks Ensemble	129
Grammatik for Windows	55
HP New Wave 3.0	109
Hardvard Graphics 2.3	295
Individual Software	39 & under
LapLink Rel 3	95
Lotus.	
Lotus 1-2-3 Rel 3.1	369
MacPrint	99
More Fonts	85
Norton	
Commander 3.0	89
Utility Advanced 4.5	89
Utility 5.0	115
PC Tools 6.0	89
Pacioli 2000	24
PageMaker for Windows 4.0	495
Personal Lawyer/ Lifestyles	55
Quarterdeck	
Expanded Memory Manager 386 v5.1	69
Manifest	45
Qram	59
Quicken for IBM/Mac	39
Quicken w/ Turbo Tax for IBM	74
Seiko Digitizer	289
Software Source (Public Domain)	3
Sound Blaster	145
CMS Chip / Speaker	29
SummaSketch II Digital Digitizer	325
Turbo Tax w/ Quicken for IBM	74
Ventura Publisher Gold for Windows after $75 REBATE	444
Wordstar 6.0	245

21. TAPE BACKUP

AT & T	
40MB	$195
COLORADO	
DJ-10 (40,60,120MB)	255
AB-10 Controller	75
CK-17 Cable	20
KE-10 Ext Hardware kit for PC, XT, AT	119
EVEREX	
(with software, cassette/cartridge)	
60MB (DC600A)/ Ext	645/765
250MB (DC6250)/ Ext	757/865
60MB-PS/2 (DC600A)/ Ext	765/875
250MB-PS/2 (DC6250)/ Ext	875/995
60MB AT Floppy w/o media	225
60MB AT Floppy Ext w/ power	395
40MB PS/2 Floppy (50,60,70,80) (DC2000) w/o media	265

22. VGA CARDS

All VGA cards come 1024x768

ATI Wonder 256K/512K	$155/170
ATI w/ mouse	Add 40
Everex EGA Card	59
Everex Viewpoint Standard	80
Everex Viewpoint 256K/512K	155/175
Everex VRAM 1MB	235
Genoa 256K 6300/6400	135/155
Genoa 6400A 512K	225
ORCHID Orchid Prodesigner II 1MB	265
Paradise Plus 256K/512K	175/195
Super VGA 1MB Trident chipset	179
Video 7 1024i 256K/512K	195/215
Video 7 VRAM 512K	365

Training Classes

April 20
... Build your own 386 PC
April 27
... Build your own 386 PC

Class includes :
A complete 386-25 system:
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4 hours hands on experience
$2185.00 per person

April 14 ..... WordPerfect 5.1
April 21 ..... DBase IV
April 28 ..... Lotus 1-2-3 3.1
May 5 ..... DOS 4.01
May 12 ..... WordPerfect 5.1

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Class includes :
hands on experience, manuals

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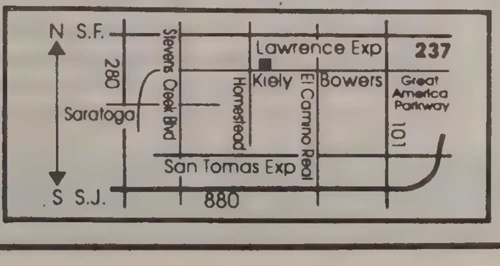

RESOURCES

Calendar Of Events

MARCH

March 16 Mac Services For The '90s: Seminar By Leading Mac-Users And Color Service Bureaus. San Francisco. Pixel Ink Consultants. Call: (415)564-0962.

March 17 Computer Show & Sale. San Rafeal. MarketPro Shows. Call: (415)388-8893.

March 18 DOS Course. Alameda. SymPro. Call: (415)865-0600.

March 18 Word Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 19 Office Management Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 19 Ventura Publisher 3.0/Macintosh Edition Seminar. Sunnyvale. M & P Computer. Call: (408)738-0304.

March 20 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

March 20 Judging Documents Seminar. San Francisco. Society For Technical Communication. Call: (415)985-7121.

March 20 PageMaker II Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 20 UNIX Desktop Directions And Opportunities For Software Developers In The '90s Presentation. Palo Alto. SEF. Call: Barbara Cass, (415)854-7219.

March 21 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

March 21 Basic Mac Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 21 Designing High-Quality User Interfaces Course. Menlo Park. UC Berkeley Extension. Call: (415)642-4111.

March 21 HyperCard Scripting Part 1 Class. San Francisco. Abacus Training. Call: (415)759-9508.

March 21 Windows 3.0 Operator Course. Alameda. SymPro. Call: (415)865-0600.

March 21 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

March 22 Intro To Novell Class. San Francisco. State University Extended Education. Call: (415)338-1205.

March 22 MS Word For Windows Productivity Class. San Francisco. Training Works. Call: (415)243-0100.

March 22 PC Repair Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

March 22 Windows 3.0 Supervisor Course. Alameda. SymPro. Call: (415)865-0600.

March 23 Computer Show & Sale. Pleasanton. MarketPro Shows. Call: (415)388-8893.

March 23 How To Be A Computer Entrepreneur Class. San Francisco. Call: (415)547-2380.

March 23 Intermediate Mac Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 23 Intro To WordPerfect 5.1 Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

March 23 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

March 24 Computer Show & Sale. Vallejo. MarketPro Shows. Call: (415)388-8893.

March 25 MS Word For Beginners Class. San Francisco. Abacus Training. Call: (415)759-9508.

March 25 OS/2 Concepts Course. Alameda. SymPro. Call: (415)865-0600.

March 25 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

March 25–27 Time Line 4.0 Training Seminar. San Francisco. Symantec Training Group. Call: (415)899-7208.

March 25 & April 1 ACT! Class. San Francisco. Training Works. Call: (415)243-0100.

March 26 Intermediate Lotus Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

March 27 Scanner Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

March 28 Mathematical Problem Solving With Mathematica Course. Berkeley. UC Berkeley Extension. Call: (415)642-4111.

March 29 MacroMania Seminar. San Francisco. Word For Word. Call: (415)521-7347 or 655-1482.

March 30 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

March 30 Computer Show & Sale. Santa Rosa. MarketPro Shows. Call: (415)388-8893.

March 30 Computer Swap. Alameda County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

March 30 Intro To Lotus Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

March 30 Intro To WordPerfect Class. San Francisco. SFPCUG. Call: (415)821-1310.

APRIL

April 1–4 R:Base For DOS Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 2 Intro To DOS Class. Walnut Creek.

continued

APRIL

CONNECTIONS '91

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DTC 7280FD/HD CONTROLLER (1:1)	115
IDE DUAL CONTROLLER	25
DTC 3280D (1:1,SCSI)	145
DTC 6280D (1:1,ESDI)	145
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ADAPTEC 2322DK (1:1,ESDI,w/SW)	195

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COMPUTER STAND	8

Calendar Of Events continued

Computer Education Center. Call: (415)937-2566.

April 2 Laser Printer Seminar. Various Bay Area locations. Laser Care Co. Call: (415)854-4425.

April 2 MS Word For Windows Productivity Class. San Francisco. Training Works. Call: (415)243-0100.

April 2–4 HomeMedia Expo: The Conference On Entertainment, Computer & Communications Technology & Programming. Los Angeles. American Expositions, Inc. Call: (212)226-4141.

April 3 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 3 MS Word For Windows Desktop Publishing Class. San Francisco. Training Works. Call: (415)243-0100.

April 3 Photography On Your PC With Gray FX Seminar. San Francisco. RL & Associates. Call: (415)512-1180 or 621-1845.

April 3 PowerPoint Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 3 & 4 Fox Pro Intro Class. Santa Clara. Training Works. Call: (408)287-8827.

April 4 Intro To Lotus Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 4–5 Computer Basics—DOS Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 5 Foxbase Intro Class. San Francisco. Training Works. Call: (415)243-0100.

April 5 Installing NetWare 286 Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

April 6 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 6 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

APRIL 7–9

EIS '91

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April 6 Computer Show & Sale. Concord. MarketPro. Call: (415)388-8893.

April 6 Third Annual Computer Law Symposium: The Legal And Business Aspects Of Protecting Your Intellectual Property In The Computer Industry. San Francisco. Hastings Law Journal. Call: (415)565-4731.

April 7–9 EIS '91. San Francisco. EIS Institute. Call: Ms. Emily Thomas, (617)964-4555.

April 9 GlobaLink Conference. San Mateo. GlobaLink, Ltd. Call: (213)489-8432.

April 9 Intro To MS Windows Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 9–12 The Software Development Management Conference. San Francisco. Software Development Conferences. Call: (415)995-2472.

April 10 & 11 Quattro Pro Link Class. Santa Clara. Training Works. Call: (408)287-8827.

April 10–12 Multimate 4.0 Class. Mountain View. Tek/Link. Call: (408)727-2300.

April 11 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 11–12 Western Educational Computing Workshops. Davis. CECC. Call: Judah Rosenwald, (415)338-1212.

April 12 Novell For The End-User Class. Santa Clara. Training Works. Call: (408)287-8827.

April 12 System Administrator Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

April 13 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 13 Computer Mart. Cupertino. De Anza College. Call: (408)864-8581.

April 13 Computer Swap. San Mateo County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

April 13 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

April 13 WordPerfect 5.1 Productivity Class. San Francisco. Training Works. Call: (415)243-0100.

April 14 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

April 15 Automating Your Accounting System Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

April 15 MS Word For Windows Intro Class. San Francisco. Training Works. Call: (415)243-0100.

April 15 Quattro Pro Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 16–17 Excel For Windows Class. San Francisco. Tek/Link. Call: (408)727-2300.

April 16–19 Spring '91 Professional Lecture Series. Huntington Beach. Ashton-Tate. Call: 1-800-ASHTON-4.

April 17 MS Excel Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 17 Presentation By Robert Carr On Pen-Based Software Technology. Palo Alto. SEF. Call: Barbara Cass, (415)854-7219.

April 18 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

April 18–19 Quattro Pro Class. San Francisco. Tek/Link. Call: (408)727-2300.

April 20 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 20 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

April 20 Computer Swap. Cow Palace. Computer Swap. Call: 1-800-433-7469.

April 6 Computer Show & Sale. Sacramento. MarketPro. Call: (415)388-8893.

April 22 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 22–24 Multimate 4.0 Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 22–25 Quattro Pro Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 23–25 First Silicon Valley Networking Conference. Santa Clara. Systech Research. Call: Kenneth Majithia, (408)924-3930.

April 23 & 30 PAL Programming Class. San Francisco. Training Works. Call: (415)243-0100.

April 23–24 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

April 24–26 Asilomar Invitational Microcomputer Workshop. Asilomar. IEEE Computer Society. Call: (415)856-8051.

April 25 Word For Windows Class. Walnut

continued

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- **COW PALACE**
  APRIL 20, 1991 • San Francisco, CA
- **SANTA CLARA COUNTY FAIRGROUNDS**
  APRIL 27, 1991 • San Jose, CA
- **ALAMEDA COUNTY FAIRGROUNDS**
  MAY 11, 1991 • Pleasanton, CA

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Calendar Of Events continued

Creek. Computer Education Center. Call: (415)937-2566.

April 25–26 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

April 26–29 Multimedia Information Systems Conference. Palo Alto. ASIS. Call: (301)495-0900.

April 27 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 6 Computer Show & Sale. Vallejo. MarketPro. Call: (415)388-8893.

April 27 Computer Swap. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

April 27 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

April 28–May 1 International Languages Conference. San Francisco. Borland. Call: CT Meeting Planners, 1-800-942-TURBO.

April 29 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 29 & 30 Novell For System Administrators Class. Santa Clara. Training Works. Call: (408)287-8827.

April 30 Getting The Most Out Of Microsoft Windows 3.0 Workshop. Concord. Dun & Bradstreet. Call: (212)312-6880.

April 30 Intermediate Lotus Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 30–May 2 Defense & Government Computer Graphics Conference. Anaheim. National Council For Education On Information Strategies. Call: 1-800-343-6944.

April 30–May 2 Third Annual Monterey Software Conference—Getting It Right: Advances In Software Requirements, Design And Management. Monterey. Digital Consulting, Inc. Call: (508)470-3880.

MAY

May 1 Getting The Most Out Of Microsoft Windows 3.0 Workshop. San Francisco. Dun & Bradstreet. Call: (212)312-6880.

May 3 PowerPoint Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 5 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

May 5–8 Mapping The Future: Toward The 21st Century Conference. Las Vegas. Association For Systems Management. Call: (216)243-6900.

May 7–10 R:Base For DOS Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 7–8 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

May 9–10 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

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80387DX25	$418	80387SX20	$288

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3MB for T3200	$268
2MB/4MB for T3200SX/SXC	$148/528
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1200B for IBM PS/2 Models 50/60/80	$138
2400B for IBM PS/2 Models 50/60/80	$178
2400B for NEC Multispeed & Multispeed/HD Laptops (This is original NEC. Please see note #4)	$138
2400B for NEC Prospeed Laptop	$138
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NOTES:

1. All Fax/Modems listed have both "Send and Receive" capabilities.
2. All items come with a full 5-year warranty.
3. Those modems with notations are Original Toshiba Modems complete with Toshiba Manuals and Software. These are the very same modems that Toshiba sells under its own label!
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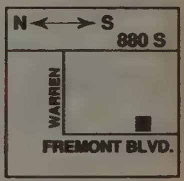

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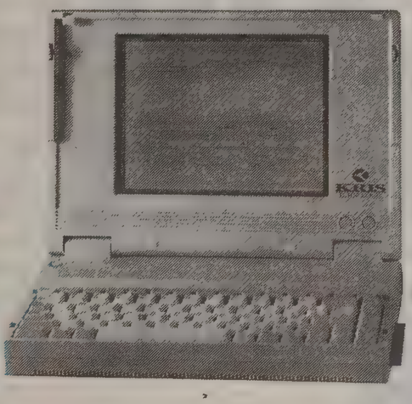

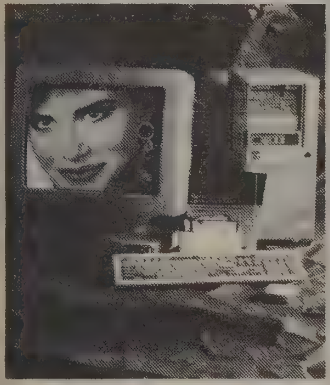

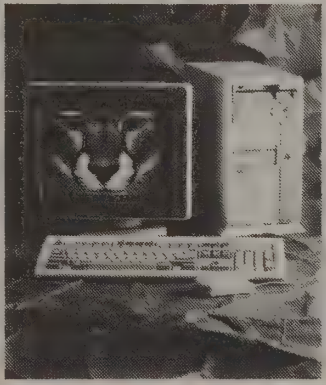

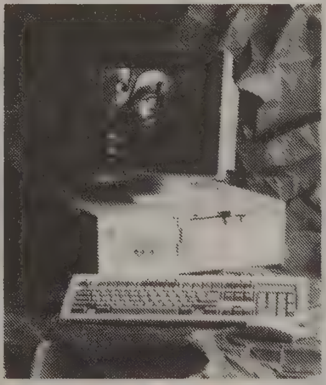

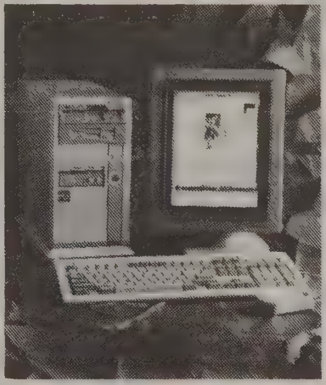

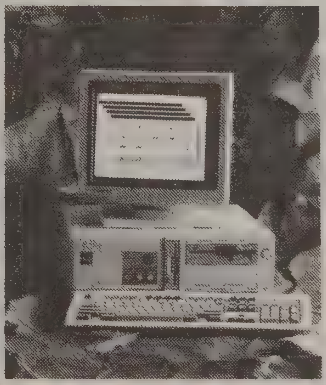

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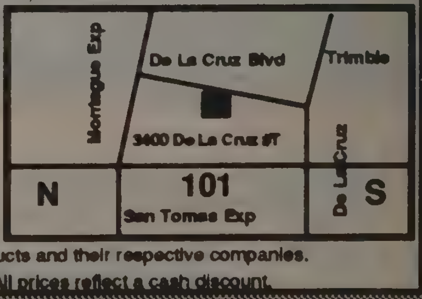

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Plotter

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ENCAD Plotter	
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-SP1800, A-D,8 pens	3435
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-SummaSketch II Pro	639
KURTA	
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-12X17, Cur. & Stylus	649
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-12X18, Cur. & Stylus	655
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USER GROUP NETWORK

BULLETIN BOARDS

209

BerthaBoard BBS. (209)239-9853. 8-N-1, 24 hrs., 1200/2400. MS-DOS, C, and Pascal. 800MB online, multinode chat, email, PD and shareware library. Sysop: Kenneth Roach. [Exp. #82.]

408

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Bay Area Atari Users Group (BAAUG) BBS. (408)986-0215. 8-N-1, 24 hrs. Sysop: Joe Fischer. [Exp. #81.]

Code Room. (408)266-3818. 8-N-1, 300/1200/2400. A Programmer's BBS, tons of C files! Doors/messages. Sysop: Ramin Akhbari. [Exp. #81.]

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Cruzio. (408)423-9995. 1200/2400. If dialing in @ 1200 baud, send Crtl–C on connect. Serving local Santa Cruz Co. with calendar, directory, conferencing, email and USENET newsgroups. Sysop: Chris Neklason and Peggy Dolgenos. [Exp. #82.]

Data Port BBS. (408)259-3019. 1200/2400. Online games, local main, mail networking, file transfers. FidoNet 1:143/106. SaudiNet 90:8009/106. Sysop: Ian Robertson. [Exp. #82.]

Dirt Alert OHV BBS. (408)247-3229. 8-N-1, 24 hrs., 300/600/1200/2400. Text only OHV environmental activists BBS for the protection and preservation of Off Highway Vehicle areas. [Exp. #81.]

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415

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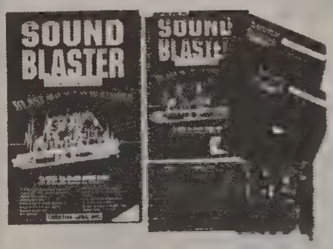

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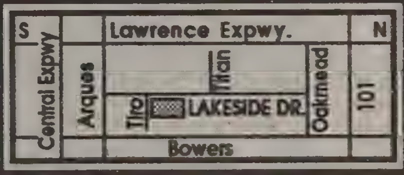

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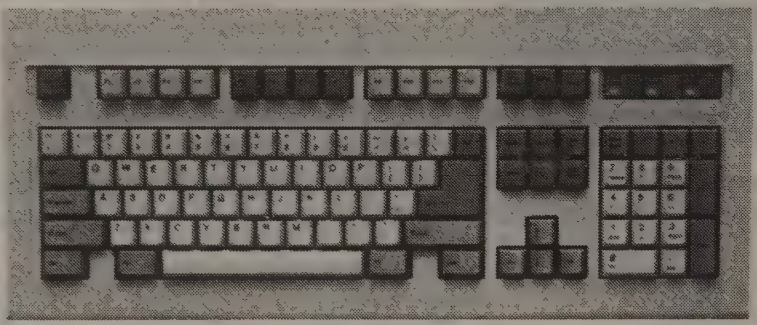

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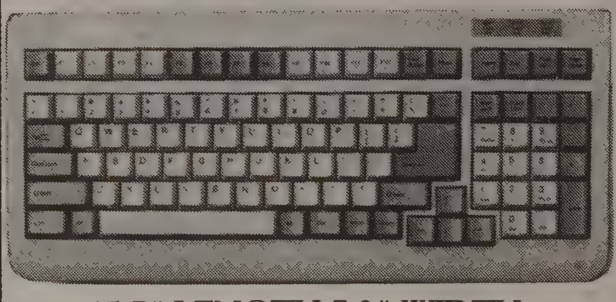

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Artificial Intelligence Association. Individuals interested in learning about the use and application of AI. Call: Rita Zokaei, (415)574-8225. [Exp. #80.]

Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, room 608-7. Call: Judy Stern, (415)643-7499. [Exp. #84.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #84.]

Independent Computer Consultants Assn. Referral Service. Designed to give public access to the knowledge and experience of Assoc. members, no fee. Call: Referral Service Hotline, (408)980-7272. [Exp. #80.]

Independent Computer Consultants Association. Meetings: 3rd Wed., 6:00 pm. Meetings are open to non-members and members. Call: ICCA, (415)441-2948. [Exp. #80.]

Society For Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. Call: September Jenner, (408)971-2336. [Exp. #83.]

Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219. [Exp. #80.]

The Association For World-wide Software Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #84.]

United Sysops Association. Meetings: 2nd Wed, 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Assoc. for system operators and BBS users. Call: Bill Strouse, (415)453-3321. [Exp. #84.]

Women's Computer Society. Call: Tanya Halepota, (415)949-3936. [Exp. #80.]

Writer's On-line Association Of Technical Communicators. Meetings: Weekly, Berkeley. Call: Cynthia Kolnick, (415)673-5819. [Exp. #80.]

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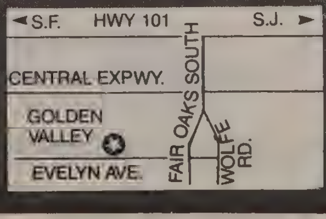

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Accounting East Bay User Group. Meetings: 4601 Clipper Ct., Fremont. Call: Phrede Deese, (415)657-5880, BBS (415)795-4268. [Exp. # 80.]

Champion Accounting Systems User Group. Fremont. Newsletter, BBS, ideas and help. Call: Garhart, (415)657-5880. [Exp. #84.]

On-line Accounting Users Group. Call: Bob, (415)686-3304. [Exp. #80.]

San Francisco Bay Area Platinum User Group. Call: Steve Koss, (415)562-2754, or Jim Britton, (415)576-3209. [Exp. #81.]

AMIGA

ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Beginners group. Call: (408)262-9334. [Exp. #85.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary. Call: (415)584-8406. [Exp. #83.]

COW—Commodore Owner's Workshop User Group. Meetings: 3rd Thurs., 7:00 pm, San Bruno Parks & Rec Bldg. No dudes! Call: Steve Beale, (415)355-8927, BBS (415)359-5975. [Exp. #81.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:00 pm, Palo Alto Hyatt. Call: Mike Fisher, (415)855-9426, BBS (415)595-2679. [Exp. #84.]

APL

APL Bay Area Users Group. Meetings: 2nd Mon., 7:00 pm. Variable. Call: Tibor Horvath, (415)283-5611. [Exp. #83.]

APPLE

GravenStein Apple IIGS User Group. Meetings: 3rd Sat., 10:00 am, West America Bank, McDowell Ave, Petaluma. Call: (707)763-1428. [Exp. #80.]

San Francisco Apple Core. Meetings: 3rd Tues., 7:00 pm, SF State University, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #84.]

APRICOT

Apricot User Group, East Bay Chapter. New members welcome. Call: Ron, (415)828-9643. [Exp. #85.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #84.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #84.]

AT&T Computer Users Group. Meetings: 2nd Wed., 6:30 pm. Refreshments, technical support and informal discussions. Also, Sunnyvale DOS and UNIX groups. Call: Jim Lansing, (415)885-6631. [Exp. #84.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #84.]

ATARI

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Hospital Auditorium, Palm Rd. and Circle Dr., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #84.]

COAST User Group. Meetings: 3rd Wed., 1514 University Ave., Berkeley. Specializing in DTP, CAD, and serious use. Call: Bill Yerger, (415)548-8999, BBS (415)845-1789. [Exp. #85.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Public Library. Atari Club, 8/16/32-bit. Call: Keith Sammons, (415)887-2008. [Exp. #84.]

Santa Clara County Atari Users Group. Meetings: 2nd Wed., 7:00 pm, San Jose Computer Showroom, 1278 Alma Court. Formerly South County Atari Users Group. Call: Ron Reade, (408)225-7162, BBS (408)848-6032. [Exp. #84.]

CAD/CAM

AutoCAD DCA Engineering Software Users Group. Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #84.]

Marin ACAD User Group. Meetings: 1st. Thurs. Call: Gigi Bollinger-Himes, (415)491-4722. [Exp. #80.]

S.F. AutoCAD User Group. Meetings: 1st Mon., 6:30 pm, SFAIA, 130 Sutter St., 6th fl. Call: Katie Price, (415)923-9228. [Exp. #81.]

SF Bay Area C.A.S.E. Users Group. Meetings: Once per quarter. Call: David Plotkin, (415)842-6706. [Exp. #84.]

Textile Computer Users Group—TCUG. Meetings: Bimonthly, 1st Sun., 10:00–noon. Bedford Hotel, San Francisco. Call: (415)284-1635. [Exp. #84.]

CE SOFTWARE

The CE Software Users Group. Share tips, tricks, and info about your favorite CE Software product. Talk to tech support, get the inside scoop on newest offerings. Call: Dianna Pecina, (515)224-1995, MCI Mail: CESOFTWARE. [Exp. #85.]

COMMODORE

Cupertino Chapter Of 64/More Commodore User Group. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #85.]

CWEST Commodore 64/128 Users. Meetings: 3rd Wed., Fort Mason. For more information write: 1564 Waller #B, San Francisco, CA 94117. Call: (415)626-9946. [Exp. #83.]

North Valley Chapter Of 64/More Commodore User Group. Meetings: 2nd Sat, 10:00 am. Milpitas Library. Call: (408)262-9334. [Exp. #85.]

COMMUNICATION

Toastmaster International. Meetings: Every Wed., 6:00 pm, Laguna Honda Hospital, San Francisco. Improve your communication and presentation skills. Call: Maurine Martin, (415)882-7335 or (415)759-0634. [Exp. #84.]

dBASE

dBASE IV SIG. Meetings: 1st Tues., Ashton-Tate, 6411 Guadalupe Mines Rd., San Jose. SIG of the Silicon Valley dBase Language Group. Call: Charles King, (408)724-7024. [Exp. #84.]

dBASE SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 333 California St., San Francisco. Call: Mark Webster, (415)647-3675. [Exp. #83.]

East Bay Database User Group. Guest speakers. Call: David Chilcott, (415)653-1303, BBS (415)652-1763. [Exp. #85.]

SQL_Forum. Meetings: 1st Thurs., 6:30 pm, 394 Pacific Ave., San Francisco. Topics include client/server computing & SQL database servers. Speakers, demos. Call: (415)695-2748. [Exp. #83.]

SVDLG dBASE SIG. Meetings: 1st Tues., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San Jose. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

SVDLG FoxPro SIG. Meetings: 2nd Thurs., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San

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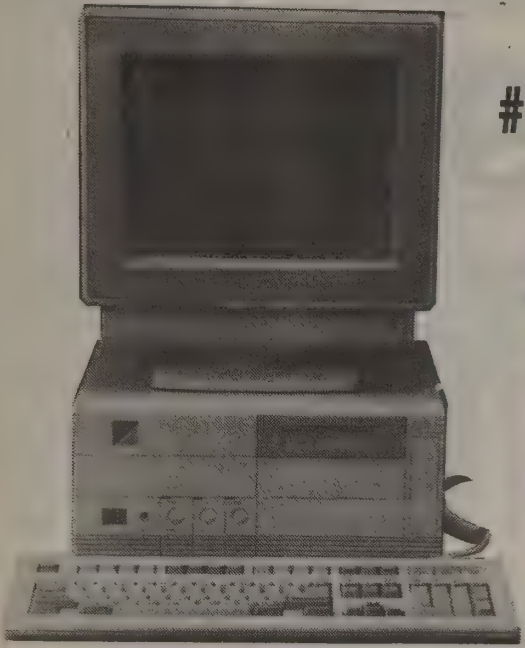

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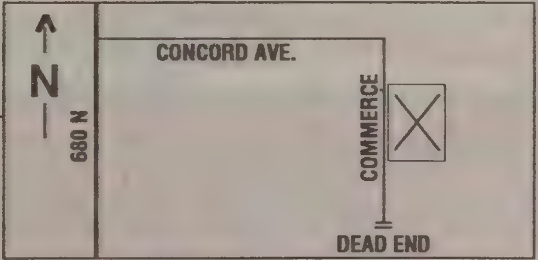

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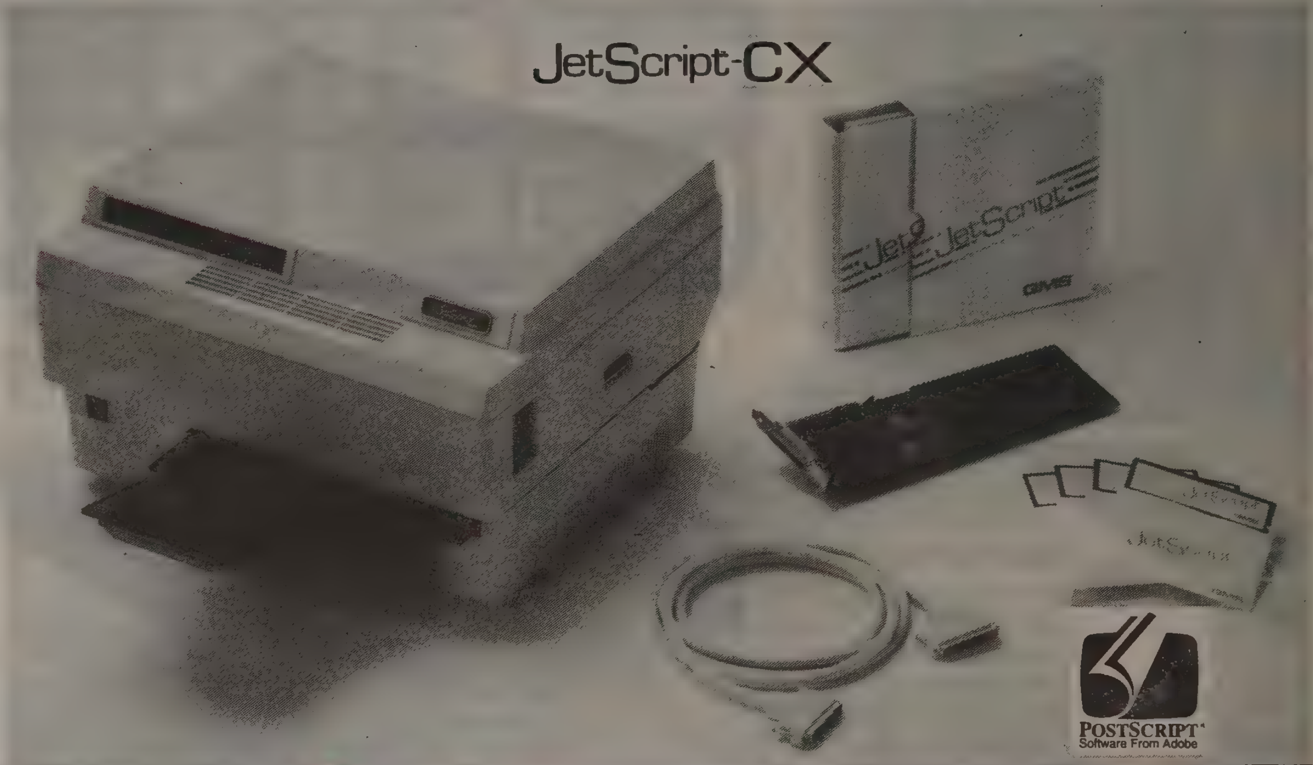

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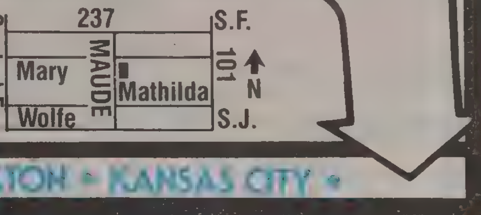

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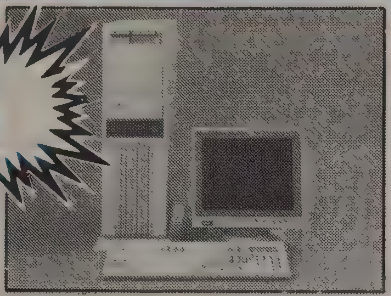

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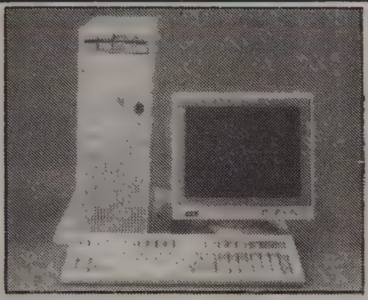

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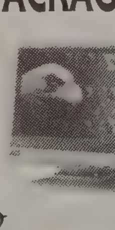

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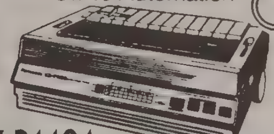

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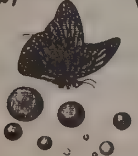

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Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:00 pm, 660 Market St., Ste. 215, San Francisco. Call: Eric Leong, (415)635-0159. [Exp. #83.]

San Mateo Ventura Publisher Users Group. Call: Elinor Cruz, (415)366-5317. [Exp. #81.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #80.]

GENEALOGY

Contra Costa County Genealogical Society/Computer User Group. Meetings: 1st Sat. of odd-numbered months. Call: Susan, (415)372-6996. [Exp. #80.]

Contra Costa PAF User Group. Meetings: Last Sat., Call: Susan, (415)372-6996 or Julia, (415)933-6555. [Exp. #80.]

IBM AND COMPATIBLES

Berkeley PC/Compatible User Group. Meetings: 2nd Mon., 7:00 pm, Winners Circle, 2618 Telegraph Ave. Call: (415)845-4814 or (415)526-4033. [Exp. #80.]

Compatible User Group. Meetings: 2nd Mon., 7:00 pm, Winners Circle Systems, 2618 Telegraph, Berkeley. Call: Mel Mann, (415)526-4033. [Exp. # 80.]

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm, 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #81.]

Desktop Video SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Mike Shurtz, (415)522-1797. [Exp. #83.]

DESQView SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Visitors $3. Call: Adam Baum, (415)841-5628. [Exp. #83.]

EastBay FOG. Meetings: 2nd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #80.]

GeoWorks SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Larry Yurdin, (415)527-2647. [Exp. #83.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 7:30 pm, San Rafael Community Center. Call: (415)927-2909. BBS (415)927-1216. [Exp. #83.]

Hypertext/Hypervideo SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: M. Mallicot, (415)922-1587. [Exp. #83.]

Investments SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Richard Haven, (415)566-8076. [Exp. #83.]

Lotus 1-2-3 SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Jerry Stern, (415)566-9675. [Exp. #81.]

Napa Valley PC User Group. Meetings: 2nd Wed., 7:30 pm, 10 Chapel Hill Dr., Napa. Call: Lee Schwab, (707)257-2675. [Exp. #85.]

PC BasicS. Meetings: 3rd Mon., 7:30 pm, Micro Age Computers, Sunnyvale. SIG of Silicon Valley Computer Society. Call: (415)326-2435. [Exp. #80.]

PCjr SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: John King, (415)472-7035. [Exp. #83.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm, Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #80.]

San Francisco PC Users Group. Meetings: 3rd Mon., 7:30 pm, UCSF Laurel Heights, 333 Califronia St., San Francisco. Call: (415)221-9166, BBS (415)621-2609. [Exp. #82.]

San Lorenzo User Group. Meetings: 2nd Tues. and the 20th, 7:00 pm, Gathering Place in Ben Loman, Santa Cruz County. Call: Chuck Schafer, (408)338-7348, BBS (408)335-4672. [Exp. # 81.]

Stanford/Palo Alto Users Group For PCs. Meetings: Last Wed., 7:30 pm, Stanford Campus, Jordan Quad, Polya Hall, Turing Aud. Call: (415)329-8252. [Exp. #80.]

WordPerfect SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Visitors $3. Call: Kendall Callas, (415)821-1310. [Exp. #83.]

KNOWLEDGE-MAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm. JNZ, Inc., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878, BBS (415)935-4878. [Exp. #84.]

LAPTOPS

Bay HPX HP Laptops & Handhelds. Meetings: 2nd Sat. Call: Michael Felsenstein, (415)564-8279. [Exp. #84.]

MACINTOSH

Mac SIG DUAU. Meetings: 3rd Tues., 7:00 pm, Willow Creek Center, 1026 Mohr Lane, Concord. The perfect place for beginners and old timers. Call: (415)676-9905. [Exp. # 80.]

North Coast Mac Users Group. Meetings: 3rd Thurs., 7:30 pm. Lark 2004, Santa Rosa Jr. College. SIGs on development, programming, and multimedia authoring, networking, graphics, and more. Call: Reed Hopkins, (707)542-1089, BBS (707)792-1871. [Exp. #85.]

MacSEF. Meetings: 3rd Tues., 7:00 pm, Call: Tony Meadow, (415)644-9400. [Exp. #84.]

MARKETING

HTEC Marketing SIG. Meetings: 4th Wed., 6:30 pm. Call: Hal Johnson, (415)441-6897. [Exp. #81.]

MULTIMEDIA

Macromind Multimedia User Group And Video SIG. For more information, call: (415)442-6200. [Exp. #83.]

The International Interactive Society—IICS. Meetings: 2nd Tues., 7:00 pm, UCSF Laurel Heights Conference Center. Call: (415)328-7318. [Exp. #80.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)453-3321. BBA (408)453-3326. [Exp. #84.]

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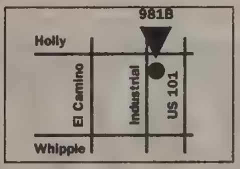

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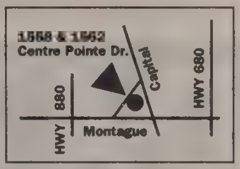

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Paradox SIG/SFPCUG. Meetings: 3rd Mon., 6:15, UCSF, 333 California St., San Francisco. Call: Richard Haven, (415)566-8076. [Exp. #83.]

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R:BASE

R:Base Users Group Of Oakland. Meetings: 2nd Thurs., 9:00 am. Call: Scott, (415)451-5316. [Exp. #85.]

TEXAS INSTRUMENTS

Texas Instruments Professional Computer Users Group. Meetings: 4th Thurs., Magnolia Inn, 176 S. Bernardo, Sunnyvale. Call: Thor, (415)386-5237, or Dr. Bill, (415)671-5237. [Exp. #81.]

UNIX/XENIX

UNIX SIG. Meetings: 2nd Tues., Oracle Corp. Fitness Center, Redwood Shores. Sponsored by Software Entrepreneurs Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #85.]

UNIX SIG/SFPCUG. Meetings: Last Wed., 7:30 pm, Call: John Tait, (415)386-9230. [Exp. #83.]

UNIX/XENIX User Group Of N. CA. Meetings: Call: Ren Just, (707)664=0820 or BBS (707)795-1721. [Exp. #83.]

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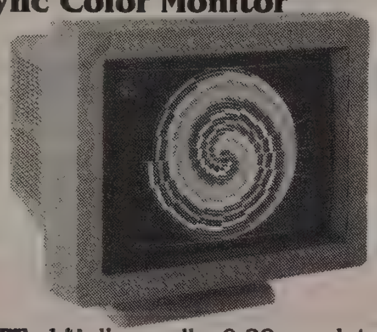

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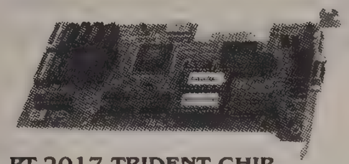

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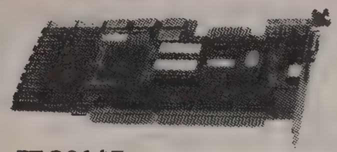

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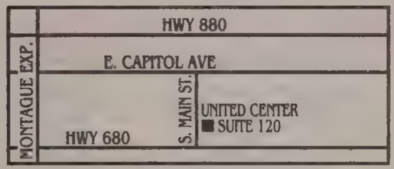

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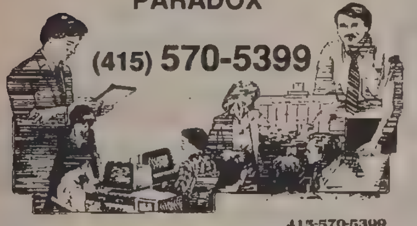

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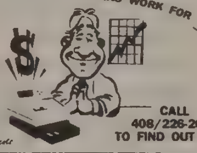

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1MB UPGRADE BRD	LBP-8 III LASER	S63-2350	$358

COMPAQ

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
512K KIT	DESK PRO 286	113012-001	$52
1MB ADD-ON MODULE	386S	113646-001	$95
4MB ADD-ON MODULE	386/20e, 20, 25&25e, 286e	113132-001	$260
4MB ADD-ON MODULE	386S	112534-001	$275
1MB MEMORY EXP. BRD	386S	113633-001	$156
1MB MEMORY EXP. BRD	PORTABLE 386	107651-001	$202
INTFC BRD	PORTABLE 386	107707-001	$98
4MB MEMORY MODULE	SLT/286	110237-001	$890
1MB MEMORY MODULE	SLT/386	118303-001	$209
2MB MEMORY MODULE	SLT/386	118304-001	$359
4MB MEMORY MODULE	SLT/386	118305-001	$741
2MB MEMORY EXP. BRD	386/16	108069/71-001	$429
1MB EXP. BRD	386/16	108069-001	$280
1MB UPGRADE KIT	386/16	108071-001	$110
8MB MEMORY EXP. BRD	386/16	108070/72-001	$1350
4MB UPGRADE KIT	386/16	108072-001	$340
INTFC BRD	PORTABLE III	107808-001	$85
2MB UPGRADE KIT	PORTABLE III	107332-001	$220
EXP. BRD	PORTABLE III	107811-001	$254
1MB MEMORY BOARD	LTE 286	117081-001	$119
2MB MEMORY BOARD	LTE 286	117081-002	$189
4MB BRD	LTE 286	117081-003	$813
2MB MEMORY MODULE	386S/20, PP386N	118689-001	$149
4MB MEMORY MODULE	386S/20, PP286N, 386N	118690-001	$425
2MB MEMORY MODULE	386/33, 486/25, SYS PRO, 33L	115144-001	$159
8MB MEMORY MODULE	SYS PRO & 486/25	116561-001	$1240
0-16MB EXP. BRD	286N, 386N	118700-001	$104

DATA GENERAL

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
4MB BOARD	AVIION SERIES	7000/K	$585
8MB BOARD	AVIION SERIES	7012/K	$1157
16MB BOARD	AVIION SERIES	N/A	$4290

DEC

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
4MB	DECSTATION 3100	MS01AA	$410
8MB	DECSTATION 5000	MS02AA	$904
32MB	DECSTATION 5000	N/A	$7267
4MB UPGRADE KIT	VAX 3100	MS01-AA	$410
8MB EXP. BRD	VAX 3100	MS42-KA	$878
12MB	VAX 3100	MS42-BA	$1333
16MB	VAX 3100	MS42-CA	$1755
20MB	VAX 3100	N/A	$2087
24MB	VAX 3100	N/A	$2542
8MB	VAX 3000 SER. (MICRO VAX III)	MS650AA, M7621	$1073
16MB	VAX 3000 SER. (MICRO VAX III)	MS650BA, M7622	$1976
32MB	VAX 3000 SER. (MICRO VAX III)	N/A	$3848
8MB	VAX 2000	N/A	$1105
12MB	VAX 2000	MS400CA	$1495
4MB	MICRO VAX II	MS630BB	$735
8MB	MICRO VAX II	MS630CA, M7609AX	$1073
16MB	MICRO VAX II	N/A	$1892
16MB	VAX 8600/8650	MS86CA, LO0225	$3673
1MB	VAX-11/780, 11/785	MS780FX, M8373	$884
4MB	VAX-11/780, 11/785	MS780JX, M8374	$1287
1MB	VAX-11/750, 11/730	MS750CA, M8750	$774
8MB	VAX-11/750	MS750HB	$3900
12MB	VAX-11/750	N/A	$5395

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EPSON

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB UPGRADE KIT	IIe, 386/20	A808091	$90
1MB UPGRADE KIT	IIe, 386/20, 386SX, 386/25	A808231	$90
4MB UPGRADE KIT	IIe, 386/20, 386SX, 386/25	N/A	$240
2MB UPGRADE KIT	IIe, 386SX	A808101	$159
2MB UPGRADE BOARD	EPL 6000	1BS401	$280
4MB UPGRADE BOARD	EPL 6000	1BS402	$419

EVEREX

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
2MB BRD	386 STEP 33	N/A	$195
4MB BRD	486 STEP 25	N/A	$496
2MB UPGRADE KIT	286 STEP 12, 16, 20, 386 STEP IS	N/A	$156
4MB UPGRADE KIT	286 STEP 12, 16, 20, 386 STEP IS	N/A	$270
1MB UPGRADE KIT	386 STEP 16, 20, 25	N/A	$81
2MB UPGRADE KIT	386 STEP 16, 20, 25	N/A	$165
4MB UPGRADE KIT	386 STEP 16, 20, 25	N/A	$294
8MB UPGRADE KIT	386 STEP 16, 20, 25	N/A	$556

HP LASER/VECTRA

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
2MB UPGRADE BOARD	LASERJET II, IID	H33444B	$145
4MB UPGRADE BOARD	LASERJET II, IID	H33445B	$238
2MB UPGRADE BOARD	LASERJET III, IIP	H33475B	$145
3MB UPGRADE BOARD	LASERJET III, IIP	H33476B	$192
4MB UPGRADE BOARD	LASERJET III, IIP	H33477B	$238
2MB UPGRADE KIT	VECTRA QS/16S ES/12PC	D1354A	$139
4MB UPGRADE KIT	VECTRA QS/16S RS/20PC	D1542A	$280
4MB UPGRADE KIT	VECTRA QS/20S RS/25PC	D1642A	$280
1MB UPGRADE KIT	VECTRA 486 PC	D2150A	$85
2MB UPGRADE KIT	VECTRA 386/25	D2381A	$149
4MB UPGRADE KIT	VECTRA 486 PC	D2151A	$420
8MB UPGRADE KIT	VECTRA 486 PC, 386/25	D2125A	$1040

HP/APOLLO

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
2MB BOARD	DN3000	N/A	$1166
4MB BOARD	DN3500, 4000, 4500	N/A	$1892
8MB BOARD	DN3500, 4000, 4500	N/A	$3497

HP/1000

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB BOARD	A400, 600, 700	N/A	$1268
2MB BOARD	A400, 600, 700	N/A	$2028
4MB BOARD	A400, 600, 700	N/A	$3211
6MB BOARD	A400, 600, 700	N/A	$4394
1MB BOARD	A900	N/A	$2958
2MB BOARD	A900	N/A	$3549

HP/3000

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
4MB BOARD	6X, 7X	N/A	$4394
8MB BOARD	6X, 7X	N/A	$8450
2MB BOARD	37, Micro 3000XE	N/A	$3380
4MB BOARD	37, Micro 3000XE	N/A	$4563
2MB BOARD	39, 4X, 5X	N/A	$2620
4MB BOARD	39, 4X, 5X	N/A	$5493

HP/9000 WORKSTATION

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB UPGRADE	200, 310, 320	N/A	$571
2MB UPGRADE	200, 310, 320	N/A	$1078
4MB UPGRADE	200, 310, 320	N/A	$2177
8MB UPGRADE	200, 310, 320	N/A	$4385
4MB BOARD	318	N/A	$3482
8MB BOARD	319	N/A	$6633
4MB CONTROLLER BOARD	330, 350, 370	98258A	$3651
4MB ADD-ON BOARD	330, 350, 370	98258B	$3245
12MB ADD-ON BOARD	330, 350, 370	98258C	$7301
1MB UPGRADE	332	N/A	$571
4MB UPGRADE	332	98269B	$1395
4MB UPGRADE	340	9826788	$2008
4MB RAM BOARD	345, 375	98229A	$1661
8MB RAM BOARD	345, 375	982629B	$3289
16MB RAM BOARD	345, 375	N/A	$4986
4MB UPGRADE	360	98267A	$1850
8MB UPGRADE	360	98267B	$3540
12MB UPGRADE	360	98267C	$5061

IBM

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
512K KIT	PS/1	1057035	$91
2MB KIT	PS/1	N/A	$358
2MB MODULE	PS/2, 95XP	6450902	$158
4MB MODULE	PS/2, 95XP	6450128	$397

IBM (Continued)

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
2MB UPGRADE KIT	30/286, ADT BRD 1497259	30F5360	$134
1MB MEMORY MODULE	70/121, 061, E61, 55SX, 65SX	6450603	$75
2MB MEMORY MODULE	70/A21, A61, B21, B61	6450608	$136
2MB MEMORY BOARD	80/111, 311, 121, 321	6450379	$175
4MB MEMORY BOARD	80/A21, 80/A31	6451060	$449
4MB MEMORY MODULE	55SX, 65SX	34F2933	$354
2-16MB EXP. CARD	30, 50, 50Z, 60, 55SX, 65SX	6450609	$580
4-16MB EXP. CARD	70, 80	34F3011	$730
1MB MEMORY CARD	LASER PRINTER 4019/E	1039136	$125
2MB MEMORY CARD	LASER PRINTER 4019/E	1039137	$169
2MB MEMORY CARD	ADAPTER 6450367	6450372	$384

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DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB	XT	N/A	$208
2MB	XT	N/A	$247
1MB	AT	N/A	$234
2MB	AT	N/A	$284
3MB	AT	N/A	$352
4MB	AT	N/A	$408
8MB	AT	N/A	$750

NCR

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
2MB UPGRADE	3865X/IS	3279K119	$151
4MB UPGRADE	3865X/MC	3420K102	$302
2MB UPGRADE	486/MC	3314K102	$188

NEC

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB MEMORY EXP. BRD	POWERMATE SX PLUS	APC-H850E	$298
2MB MEMORY EXP. BRD	POWERMATE SX PLUS	N/A	$549
4MB MEMORY EXP. BRD	POWERMATE SX PLUS	APC-H852E	$878
8MB MEMORY EXP. BRD	POWERMATE SX PLUS	N/A	$1528
2-8MB BOARD	POWERMATE SX PLUS	APC-H251E	$488
4-8MB BOARD	POWERMATE SX PLUS	APC-H250E	$631
1MB UPGRADE KIT	PROSPEED 286, SX (NOT THE PLUS)	PC-21-21	$275
2MB UPGRADE KIT	PROSPEED 286	N/A	$420
4MB UPGRADE KIT	PROSPEED 286, SX (NOT THE PLUS)	PC-21-22	$690
2MB UPGRADE KIT	PROSPEED 386	PC-31-21	$449
8MB UPGRADE KIT	PROSPEED 386	PC-31-22	$1599
2MB CPU UPGRADE KIT	POWERMATE SX/20	OP-410-8101	$383
2-8MB EXP. BRD	POWERMATE SX/20	OP-410-8102	$383

SILICON GRAPHICS (IRIS SERIES)

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
4MB KIT	PERSONAL 4D/20/25	H4C04A	$699
16MB KIT	PERSONAL 4D/20/25	HU9C16B	$2643
4MB KIT	PRO 4D/40/50/70/80	H4C04B	$699
16MB KIT	CS/12 TURBO 12/16	H49C16B	$2643
8MB KIT	POWER SER. 4D/120/220/ 240/280	H4C08X	$1906

SUN

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
4MB OPTION	3/50	N/A	$754
8MB OPTION	3/50	N/A	$1125
4MB OPTION	3/60, 3/80, 4/60, SPARC	X104C,G,H,Y	$279
4MB OPTION	SPARC SLC	X105Z	$380
16MB OPTION	SPARC 4/60	X116H,Y,W	$1490
16MB OPTION	4/110	X116D	$1025
16MB	4/330	N/A	$2687
32MB	4/330	N/A	$4580
64MB	4/330	N/A	$7990
8MB OPTION	4/330, 4/370	X108H	$580
4MB OPTION	3/75,110,140,150,160,180	N/A	$1138
8MB OPTION	3/75,110,140,150,160,180	N/A	$1684
12MB OPTION	3/75,110,140,150,160,180	N/A	$2408
16MB OPTION	3/75,110,140,150,160,180	N/A	$3244
8MB OPTION	3/260,280,470,480, 4/260,280	N/A	$4908

TOSHIBA

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB MEMORY CARD	T1000/SE, XE	PC14-PA8311U	$259
2MB MEMORY CARD	T1000/SE, XE	PC14-PA8312U	$349
2MB MEMORY CARD	T1200XE	PC13-PA8306U	$206
2MB MEMORY CARD	T1600	PC8-PA8302U	$179
512KB MEMORY KIT	T3100E	PC9-PA8340U	$109
2MB MEMORY KIT	T3100E	PC9-PA8341U	$165
2MB MEMORY CARD	T3100/SX	PC15-PA8308U	$165
4MB MEMORY CARD	T3100/SX	PC15-PA8310U	$499
3MB MEMORY KIT	T3200	PC6-PA7137U	$305
2MB MEMORY KIT	T3200/SX	PC12-PA8307U	$175
4MB MEMORY KIT	T3200/SX	PC12-PA8909U	$499
2MB MEMORY CARD	T5100	PC7-PA8301U	$175
8MB MEMORY KIT	T5200	PC-PA8313U	$1240
2MB MEMORY KIT	T8500	PC10-PA8304U	$175
8MB MEMORY KIT	T8500	PC-PA8313U	$1240

ZENITH

DESCRIPTION	FOR MODELS	REF. P/N	PRICE
1MB UPGRADE KIT	Z386/20, 25, 33, 33E	ZA3600ME	$79
2MB UPGRADE KIT	Z386/20, 25, 33	ZA3600MG	$149
4MB UPGRADE KIT	Z386/20, 25, 33, 33E	ZA3800MK	$399
2MB UPGRADE KIT	Z386SX	Z-605-1	$139
1MB EXP. CARD	SUPERSPORT 286, 286E	ZA-180-66	$199
2MB EXP. CARD	SUPERSPORT SX, 286E	ZA-180-64	$358
1MB EXP. BRD	TURBOSPORT 386, 386E	ZA-3034 ME	$249
4MB EXP. BRD	TURBOSPORT 386E	N/A	$599

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MB/Ms	42/25	80/18	105/18	205/15	340/16
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Super VGA	$949	$1,124	$1,174	$1,524	$2,324

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Microcom 286

Microcom 386SX/16 Systems (1 MB RAM)

Standard System · Hard Drive · Monitor & Video Card

Hard Drives:	IDE	IDE	IDE	IDE	ESDI
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Mono	$974	$1,149	$1,199	$1,549	$2,349
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- Super VGA 800 x 600 Graphics Card
- 14" Color Hires Monitor (Up to 1024 x 768)
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MB/Ms	42/25	80/18	105/18	205/15	340/16
Mono	$1,174	$1,349	$1,399	$1,749	$2,549
Super VGA	$1,449	$1,624	$1,674	$2,024	$2,824

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486/33C Hires	$3,249	$3,699	$3,599	$4,399	$4,799

486/25C Hires Tower Package $2,699

486/33C Hires Tower Package $3,199

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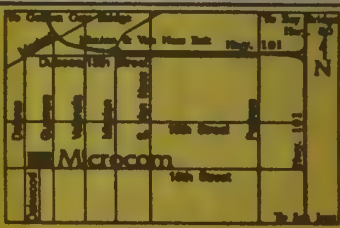

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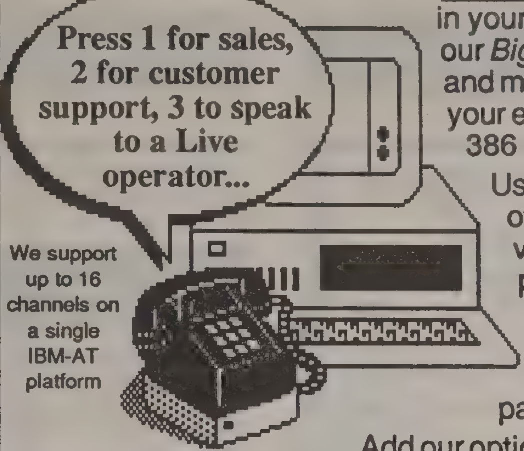
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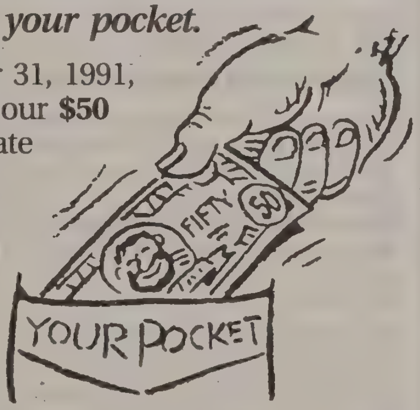

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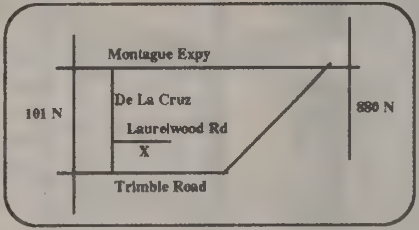

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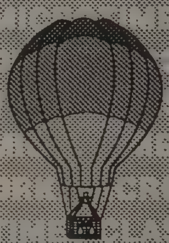

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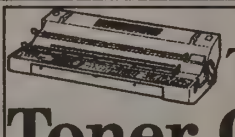

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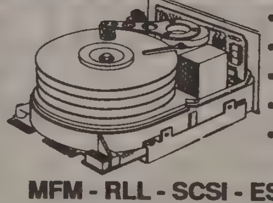

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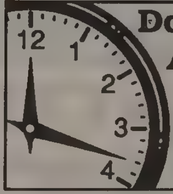

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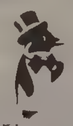

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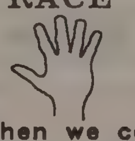

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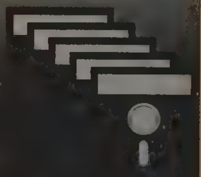

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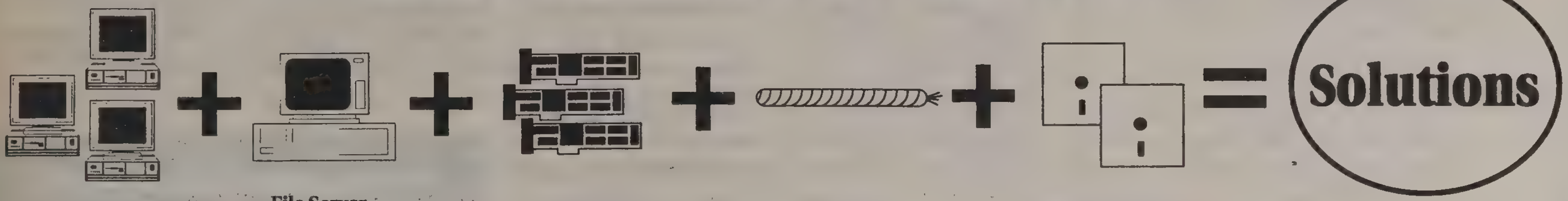

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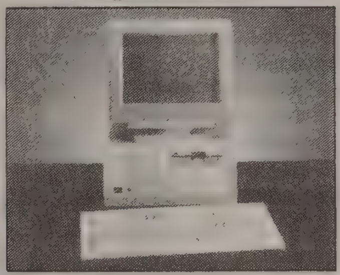

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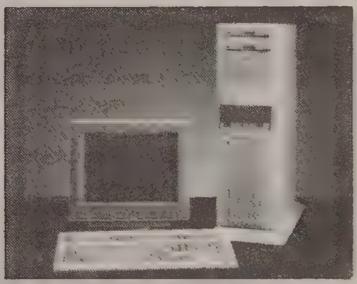

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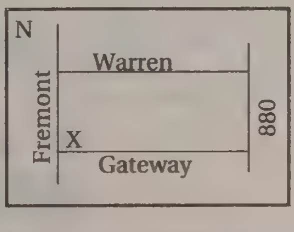

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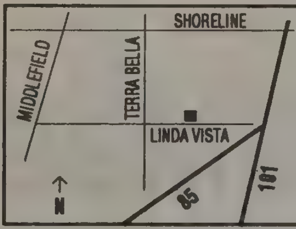

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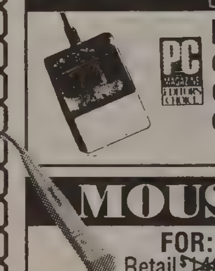

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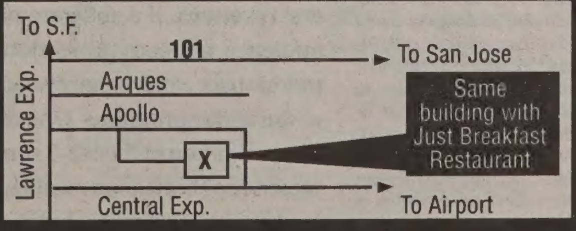

Why I Will Never Buy Copy Protected Software Again—Will They EVER Learn?

A Letter From A Sickened Reader

BY JOHN C. DVORAK

Just when you think the horror is over comes a letter moaning about something that should have long since been put to rest. Mihai Beffa of San Jose writes this mournful memo:

I have a terrible tale to tell. I hope all your readers heed this story and BEWARE the copy protection plug! Of the different copy protection schemes, the most common pest is the device which plugs into the parallel port of the computer. The segment of the industry which promotes these devices has been active in creating several myths about the use of the product.

DVORAK'S LAST COLUMN

Myth #1: Copy protection devices are transparent to the user. Just try to connect two or three such devices in series. Once I had to load on the same computer PADS-PCB layout, CAP-FAST schematic capture and FutureNet (also schematic capture). In addition to the foot-long contraption created by the three DB-25 devices, I would get only problems. Somehow each program wanted its device to be the first in line. This was equivalent to having to reconfigure the hardware each time I had to load a different program. This problem can be further compounded by the existence of the secondary parallel port (LPT2).

Myth #2: Copy protection devices are easy to install and to move from one computer to another. Both of the systems I use at work and at home are in a tower configuration. Installing a device into the parallel port requires the following "easy" steps:

Procure tools: screwdriver, flashlight. Crawl under the desk. Turn on the flashlight. Locate parallel port. Unscrew and remove printer cable. Insert copy protection device. Tighten up at least one screw. Reconnect the printer cable. Crawl back out. Test the software (fortunately, no installation required this time). Too bad—used LPT2 instead of LPTl. Go to step B.

Regarding the last item, I have to admit that there are programs which are smart enough to search for their respective device on both LPTI and LPT2. However, even the most sophisticated software sometimes gets confused when a battery of copy protection devices is installed on various parallel ports.

Myth #3: Copy protection devices increase software manufacturers' revenues. If a software package is well known and has a large audience, any copy protection scheme will be bypassed. The unscrupulous user can buy hardware or software replacements for the keys of the major programs. One of the main reasons contributing to the dissemination of the 1-2-3 spreadsheet was the availability of unprotected copies. If Lotus would have used a "foolproof" method of copy protection, its market share would have been considerably smaller. Indeed, a large number of individuals got their first look at a "broken" copy of the program, and ended up buying the real thing for their company. The Lotus copy protection of the 1-2-3 contributed to the initial success of their competitor Borland with Quattro.

The best known CAD program of all time, AutoCAD by Autodesk, achieved a substantial market share in the PC world by being the first accessible CAD program for DOS. An aggressive "upgrade" policy added features continuously.

Suddenly, Autodesk decided it was time to experiment with copy protection. A new release was made around 1985, bundled with the infamous device. The release was accompanied by company statements about the infallibility of the scheme used.

Two weeks later my company received a mail offer for a software program which circumvented the need for the copy protection device. The pressure of the users, the availability of the bypass device and the prospect of losing a major customer (the US government) made Autodesk drop the copy protection in a hurry. Five years and ten releases later, AutoCAD is a healthy program which still enjoys large market share (about 50%, to the best of my information).

I'll bet only a very small percentage of users have never broken some licensing agreement. I think it is reasonable to buy only one program to use both at work and at home. This is a violation of many software licenses, which I have to admit I ignore. I am trying to stick to the "no-nonsense" Borland approach, which advises using the software "like a book." Of course I could fulfill the most draconian agreement by removing and re-installing the software every time I want to use it on a different computer. It simply appears ludicrous to me.

Even the most common form of software piracy, "office sharing," looks justifiable in some cases. If an office has two persons using a spreadsheet for five minutes a week each, I do not believe they should have to buy two copies of the software. The Borland approach will work. The situation changes if the two persons are using the program four hours a day each.

I do see the role of copy protection devices for a very limited niche in the field. The typical software package which could benefit from copy protection should address a very narrow audience, cost over $2,000 and have no worthy competitors. The company should never hope to sell more than a few hundred or at most a few thousand copies. Given a choice, the user will always select the non-protected software which does about the same function.

Unless your software product meets the above requirements, my advice is: please don't use copy protection. The pain and aggravation to the user and ultimately your company's tarnished image are just not worth it!

AMEN!!! ■

© 1991 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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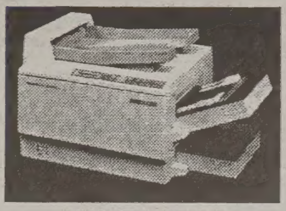

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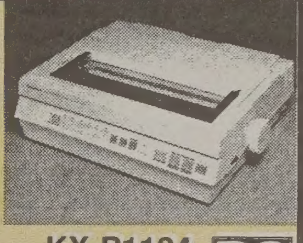

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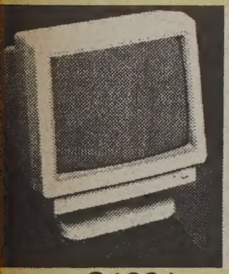

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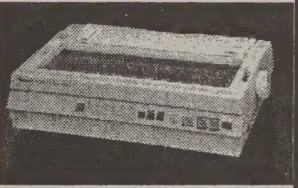

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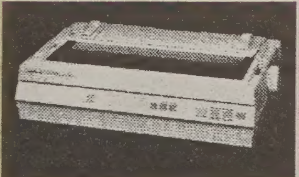

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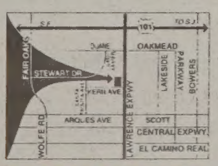

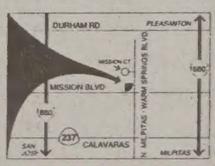

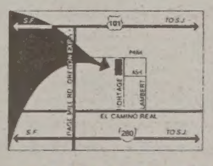

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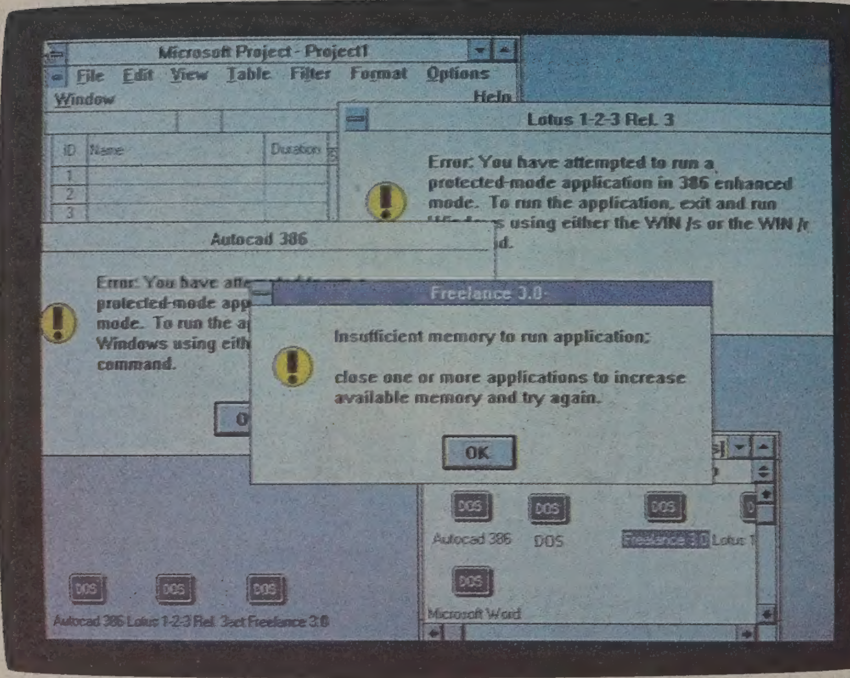


Error: You have attempted to run a
protected-mode application in 386 enhanced
mode. To run the application, exit and run
s using either the WIN /s or the WIN /r
d.

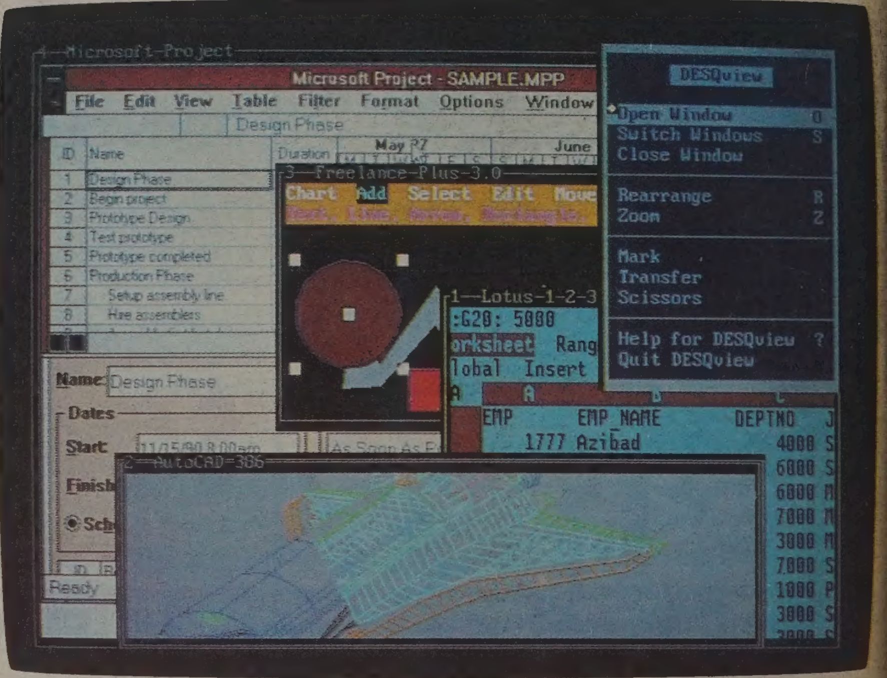
Error: You have atte
protected-mode app
mode. To run the a
Windows using eith
command.

Insufficient memory to run application;

close one or more applications to increase
available memory and try again.

Microsoft Project - Project1
File Edit View Table Filter Format Options
Window
Help
ID Name Duration
Lotus 1-2-3 Rel. 3
Autocad 386
Freelance 3.0
OK
Autocad 386
DOS
Freelance 3.0
Lotus 1
Microsoft Word
Autocad 386 Lotus 1-2-3 Rel. 3set Freelance 3.0

Windows 3.0. The multitasking, windowing environment.



4—Microsoft-Project
Microsoft Project - SAMPLE.MPP
File Edit View Table Filter Format Options Window
Design Phase
ID Name Duration May 27 June
1 Design Phase
2 Begin project
3 Prototype Design
4 Test prototype
5 Prototype completed
6 Production Phase
7 Setup assembly line
8 Hire assemblers
Name: Design Phase
Dates
Start 11/15/90 8:00am
Finish
Ready
3—Freelance-Plus-3.0
Chart Add Select Edit Move
1—Lotus-1-2-3
:G20: 5000
orksheet Range
lobal Insert
EMP EMP_NAME DEPTNO
1777 Azibad
2—AutoCAD-386
DESQview
Open Window O
Switch Windows S
Close Window
Rearrange R
Zoom Z
Mark
Transfer
Scissors
Help for DESQview ?
Quit DESQview

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This comparison was made using a system like the one you might run: Both shots show an ALR FlexCache 33/386 running DOS 3.3 with VGA display adaptor, Novell NetWare v3.01 Rev. A, with IPX/SPX v3.01 Rev A, Microsoft Mouse 7.00, and Microsoft SMARTDrive v3.03 disk cache. Buffers were set to 20. For the Windows screen, we ran Microsoft Windows 3 HIMEM.SYS and EMM386.SYS. For the DESQview screen, we ran QEMM 386 v5.1.

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